Tone and Case in Sidaamu Afo

A contribution towards understanding the relationship between tone and the three basic cases (nominative, genitive and accusative) in Sidaamu Afo

Benedetta Frosini

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Department of Linguistics and Scandinavian Studies

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Contents

Forewords

This MA-thesis was partly funded by the Norwegian Programme for Development, Research and Education (NUFU), within the project PRO 21/2002: "Joint linguistic research concerning the implementation of the Ethiopian educational policy with the respect to the use of vernaculars in elementary schools". The main linguistic focus of the collaboration between the University of Oslo and Addis Ababa University in this project was to describe and document four languages of instructions.

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Abbreviations and typographical conventions

1, 2, 3 person

acc accusative

AB auto-benefactive

CIT citation form

COP copula

DO direct object

EpV epenthetic vowel

gen genitive

Ipf imperfective

k k-class (“masculine”)

M modified

nom nominative

NP noun phrase

OBL oblique case

p plural

PaIpf past imperfective

PAS passive

Pf past perfective

PIV predicative

PrP progressive participle

S subject

Ser serial

SGT singulative

t t-class (“feminine”)

U unmodified

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1. Introduction

The aim of this thesis is to investigate the relationship between tone and the three basic cases, nominative, genitive and accusative in Sidaamu Afo. The thesis' starting point is the morphological research about these three cases in earlier literature, and in particular the description of the segmental marking of the two nominal classes, k-class and t-class, both in the unmodified form and in the modified form of the nominative, genitive and accusative. The accusative is also compared segmentally to the citation form and the form of the noun when used as the predicative (PIV) in a predicate together with the copula *-ho* or *-te*. Since several forms of a noun are segmentally alike in their case inflection, the main goal is to examine the role of the variation in tone in case marking in Sidaamu Afo. The data presented in the thesis contribute to the on going research on the suprasegmental features of the noun in the three basic cases by means of a corpus collected in a five weeks fieldwork in Awasa (Ethiopia).

In Section 1.1 several research questions are presented. Section 1.2 presents the Sidaamu Afo language. Section 1.3 is dedicated to the past research on the language in general and on the subject of the thesis in particular. Section 1.4 gives a literature review about tone and case in Sidaamu Afo. It also presents some studies about two related languages. Section 1.5 gives a description of the organization of the reminder of the thesis.

1.1 Aim of the Study

This thesis is based on the main hypothesis ($\mathbf{H_0}$) that **Sidaamu Afo expresses case marking by means of variations in tone**. Speakers of Sidaamu Afo may convey the grammatical meaning of the relationship between the head of the clause, i.e. the verb, and the dependent noun not only by means of segmental case marking on the dependent noun, but also by means of tonal marking. The question that arises is if the tonal pattern of a clause pronounced by different speakers of Sidaamu Afo remains

the same, whenever the environment in which the noun appears is the same. If a clause may show different tonal patterns in the same case, and, despite this, the clause does not vary in meaning, the tone would not convey grammatical meaning.

1.2 Reseach Hypotheses

There are two nominal classes in Sidaamu Afo. In the nominative and in the genitive the two classes show interesting segmental analogies; in the accusative the nominal classes differ segmentally from each other, but show similarities within the same class (i.e. Table 3). Even though two inflected nominal forms appear to be alike from a segmental point of view, they still may differ in their suprasegmental qualities. If this is so, we could conclude that Sidaamu Afo uses both segmental and suprasegmental alternations to express case, in other words, that in this language tonal contrasts are used to express grammatical case. A first step in the investigation was to survey, which kind of tones are used in Sidaamu Afo (contour or level) and how many of these are grammatically relevant (high versus low, or several variations). A second step was to investigate the basic cases to verify if they are expressed by means of tonal variations, and if these variations of tone in case are used for both the nominal classes. The research on the field was conducted out of three main hypotheses:

1) **Unmodified forms of the nominative and the genitive are tonally different** (this hypothesis will be discussed in Section 6.1 under the name H_1);

2) **Modified forms of the nominative and the genitive are tonally different** (this hypothesis will be discussed in Section 6.2 by means of two sub-hypotheses named H_2 and H_3);

3) **The accusative, the citation form and the predicative (PIV) are tonally alike** (this last hypothesis will be discussed in Section 6.3 under the name H_4).

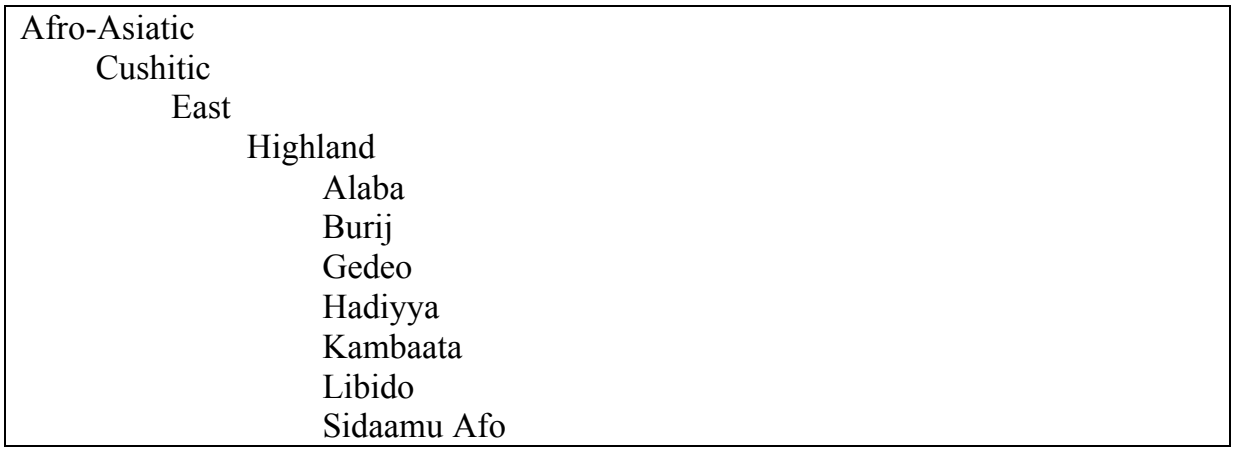
1.3 The Sidaamu Afo Language and its Speakers

Sidaamu Afo is a language spoken in the northern part of the former administrative region Sidamo in the south of Ethiopia. According to the 1994 census[1], Sidaamu Afo has 1.87 million speakers (Gordon, 2005). The area where Sidaamu Afo is spoken is bordered by three cities, Awasa, Dilla and Bansa respectively in the north, south and east, and by the river Bilate in the west. Sidaamu Afo is the dominant language of the region, and it has a recognized status as teaching language with plenty of primary educational level books. Since 1991 the new political structure of federalism in Ethiopia has attempted to develop primary education in other languages than Amharic, so that citizens could receive an education in their mother tongue. The result is that 20 of the 80 Ethiopian languages are used in schools. Sidaamu Afo is one of them. Bilingualism is common, especially in the cities: people with a formal education speak also Amharic. The Sidaama people are proud of their language.

Sidaamu Afo is a language that belongs to the Afro-Asiatic language phylum, and it is classified as a Highland East Cushitic (HEC) language, together with Kambaata, Hadiyya, Burij, Alaba, Libido and Gedeo, see Figure 1. Even so, there is still disagreement in the literature about the internal classification of the Highland languages. The main contributions to this matter are the historical overview from Hudson (1976) and the most recent effort by Tosco (2000).

[1] This is the second national census of Ethiopia. The first one was conducted in 1984. The statistic of the census is based on projections of the regularities encountered in the observation of the actual counts of census takers (Hudson, 1999).

Figure 1 Linguistic lineage for Sidaamu Afo



Literally "Sidaamu Afo" (sidaama.gen.U mouth.acc) means 'the mouth/language of Sidaama', and it is pronounced /sidaamú ʔafó/. It is the name of both the people and the area where the people live, and the term the Sidaama themselves use. In earlier literature Sidaamu Afo is often called Sidaama and/or Sidamo, but the Sidaama people does not use the last term. In this thesis I shall refer to the language with the term Sidaamu Afo.

The Sidaama are traditionally farmers. They own cattle (cows, sheep and goats) and they cultivate among other things one of the most renowned variety of coffee in Ethiopia, the Sidamo coffee.

1.4 Past Research

1.4.1 Past Research about Sidaamu Afo

In this section, I am going to take a closer look at the linguistic research that has been done on Sidaamu Afo. A literature review about tone and case in Sidaamu Afo will be given in Section 1.5.

There are two older texts by Cerulli (1938) and Moreno (1940) that are written in Italian. Moreno (1940) contains some Sidaamu Afo texts. In the last few years, three

grammars have been written in English, but none of them has yet been published: Teferra (2000), Yri (2007) and Kawachi (2007).

There are also a few texts on the phonology of Sidaamu Afo (Leslau, 1952, 1959; Wedekind, 1980; Teferra, 1994; Yri, 1990, 2004), as well as the morphophonemics (Gebre-Tsadik, 1985), and some on the syntax (Kawachi, 2004, 2006). There are also some comparative works. The first of which is written by Hudson (1976) and it provides a short description of Highland East Cushitic languages, another is about narratives in Sidaamu Afo, Gedeo and Burji and is written by Wedekind (1990), the last one is a comparison between Amharic and Sidaamu Afo on the topic of decategorialization of nouns as postpositions (Yri, 2006). There is also a Sidaamu Afo-English dictionary written by Gasparini (1983) with many example sentences of social and cultural interest, and a comparative dictionary about Cushitic languages by Hudson (1989).

1.4.2 Selected Research about Related Languages

In addition to the studies about Sidaamu Afo mentioned in Section 1.4.1, in the literature review in the next section I take into account two related languages: Kambaata in Treis (2006;2007) and Somali in Yip (2002). The reason why I take into account these two papers is that they are highly relevant for the discussion of case marking and suprasegmental features that is the topic of Section 1.5. I limit the research on related languages to those two authors only and I have no aim of being exhaustive on the topic. Treis (2006;2007) writes about case and accent in Kambaata, another Highland East Cushitic language that is closely related to Sidaamu Afo. According to Gordon (2005), Kambaata and Sidaamu Afo have 62% lexical similarity. Yip (2002) writes about tonal marking of case in Somali. According to Gordon (2005), Somali belongs to the same family as Sidaamu Afo, namely the East Cushitic family, but not the same branch. Somali is a Somali East Cushitic language

and not a Highland East Cushitic language. Somali is therefore related to Sidaamu Afo, even though not as closely as Kambaata.

1.5 Literature Review on the Subject of this Thesis

This section gives a literature review about tonal pattern in Sidaamu Afo. The works that are more relevant for the scope of this thesis are the grammars about the language, namely Cerulli (1938), Moreno (1940), Teferra (2000), Yri (2007) and Kawachi (2007). The material about suprasegmental features in Sidaamu Afo is so sparse that it is possible to give an exhaustive account of the authors' explanations about tonal pattern in this language.

Cerulli (1938) writes only about stress, and no attention is given to either tone or pitch. Cerulli claims that the phonemic stress is weak, and that in this language it prevails an intonational stress that is the result of the combination of the words in the sentence (Cerulli, 1938:61).

Moreno (1940) has only a short paragraph about stress, and nothing on pitch and tone. In this paragraph, he compares Sidaamu Afo with the other Cushitic languages, and also with Amharic, and he claims that stress tends to be moved because of psychological reasons and phonemic combinations, and hence that no rules can be given for such a variation. For this reason Moreno prefers to write all the words in his short dictionary unmarked and has decided to mark the stress in his grammar only in those cases where it appears to be prevailing (Moreno, 1940:18-19).

Teferra (2000) contradicts Moreno and claims that stress is fairly predictable in Sidaamu Afo because it falls on the penultimate syllable of a word, unless "there is a heavy syllable" in the word, in that case the "stress will shift to it" (Teferra, 2000:16). He cites as an example the noun *mine*$_t$ 'house' and claims that the stress on this noun is on the first syllable, that is /ˈmine/ (in Teferra's annotation it is written with an acute sign on the vowel: *míne*). There are no occurrences in my data of the noun

mine$_t$ ‘house’ with the stress on the first syllable. In all the sentences where this noun is present, and the citation forms I collected, the stress is always on the last syllable. In another paragraph about “Intonation Pause”, Teferra writes about a pause following the subject word group as a demarcation of the subject. The pause is, according to Teferra, the syntactic clue that “enables one to identify the subject and the object of the sentence” (Teferra, 2000:16). My data do not support Teferra’s theory. If this intonation pause is as important as he claims, it should be present in each sentence where more than two nouns are present, so that the hearer can be able to interpret correctly which function each noun has in the clause. On the basis of the data in this thesis I cannot agree that such a pause is always present.

Yri (2007) reaches a similar conclusion, however with different premises. He claims: “[T]he prominent syllable in each word is characterized both by a pulmonic muscular pulse that is stronger than that of the surrounding syllables, and a higher tone (H)”. According to Yri, H is used for the same syntactic purposes as Teferra’s pause: to mark the syntactic subject of a clause (Yri, 2007:12). In a later paragraph about “Basic case marking of the prototypical N” Yri comments Teferra’s theory and claims that “H is more persistent than the pause, which is often non-existent, and should therefore be considered part of the case marking” (Yri, 2007:29). Since I did not find evidence for the presence of a consistent intonational pause in my data, I am prone to think that Teferra takes the high tone Yri talks about as a sign of pause.

The newest contribution to the suprasegmental matter comes from Kawachi (2007). Kawachi (2007:63) denies the theory that Sidaamu Afo is a stress language; that the stress usually falls on the penultimate syllable of a word as claimed by Hudson (1976:248-249), Wedekind (1980:137-140) and Teferra (2000:16). In his analysis he treats Sidaamu Afo as a “pitch-accent language, where prominence is indicated by high pitch, rather than stress.” (Kawachi, 2007:63-64). Kawachi (2007) claims that pitch-accent patterns in Sidaamu Afo are not associated with syllables, as previous studies asserted (e.g. Teferra, 2000:16). He writes: “[H]igh pitch is normally assigned

to the last vowel segment of the citation form of an open-class word." (Kawachi, 2007:64). Kawachi's analysis is able to explain why the final syllables of certain words may be stressed. I Teferra (2000) this is the case when the last syllable is "a heavy syllable" (Teferra, 2000:16). Since Kawachi distinguishes between the syllable and the vowel segment, he can claim that such words "normally contain long vowels in their syllables" and that "the first vowel segment of the long vowel (i.e., the penultimate vowel segment) is accented, whereas its word-final vowel is not" (Kawachi, 2007:65). When Teferra talks about "a heavy syllable", Kawachi analyze it as a long vowel with the stress on the first vowel segment.

A weakness in Kawachi's analysis is that he only talks about the citation form of open-class words. He admits that when words are used in sentences the high pitch that usually falls on the penultimate vowel segment may or may not occur in its usual position (Kawachi, 2007:66). Even though Kawachi does not present an extensive study about this pattern change, he writes about something very relevant for this thesis: "Nouns and adjectives change their pitch-accent patterns depending on how they are used in sentences" (Kawachi, 2007:66-67). Kawachi's claim is that the high pitch falls on the penultimate vowel segment of a noun when used as a predicate followed by -te/-ho or -Vti, and in the nominative case in addition to their citation form; it falls on the final vowel segment of nominal stems as a suprafix[2] when the nouns are in the genitive, accusative or oblique case (Kawachi, 2007:67-69). Kawachi (2007:75) associates the tonal pattern change of the case marking to the pause Teferra (2000:16) referred to. Kawachi compares two pairs of sentences that are morphologically identical, and says that the hearer's correct interpretation of each sentence depends on the location of the pause between the constituent boundaries and the high pitch accents (Kawachi, 2007:75-76). As I wrote above, on the basis of my

[2] The term "suprafix" is also found as "superfix" in the literature, a definition is given in Section 2.2.2.

data I do not agree with this claim. Below in Figure 2 the examples Kawachi cites in his dissertation[3]:

Figure 2 The role of pause and high pitch accents in two examples from Kawachi (2007:76)

(2.75)	dangur-i		sagale		it-ø-i.
(a)	dangúr-i	//	sagalé	//	it-ø-î.
	Dangura-NOM.PROP.M	//	food(ACC)	//	eat-3SG.M-S.PRF.3SG.M
	'Dangura ate food.'				
(b)	dangur-î		sagalé	//	it-ø-î.
	[Dangura-GEN.PROP.M		food(ACC)]	//	eat-3SG.M-S.PRF.3SG.M
	'He(i) ate Dangura's(*i/j) food.'				
(2.76)	betto-te		birč'ikk'o		hiik'-ø-i.
(a)	bettó-te	//	birč'ikk'ó	//	hiik'-ø-î.
	girl-DAT.F	//	glass(ACC)	//	break-3SG.M-S.PRF.3SG.M
	'He broke the glass on the girl.'				
(b)	bettó-te		birč'ikk'ó	//	hiik'-ø-î.
	[girl-GEN.F		glass(ACC)]	//	break-3SG.M-S.PRF.3SG.M
	'He broke the girl's glass.'				

Treis (2006) writes an article about case marking in Kambaata, where she asserts that the importance of accent for case marking is demonstrated (Treis, 2006: Section 1). She takes this claim further in Section 2.3 about accent, where she writes:

[3] I chose to cite Kawachi's examples as a figure to preserve all the original notations and abbreviations. For a complete overview of the abbreviations used in these examples, see Kawachi (2007:xix-xx)

> *Each case form has a characteristic accentual pattern, some forms are even differentiated by accent only. The accusative is characterised by an accent on its case marker, see* foolí *'soul' (ACC),* gatí-ta *'backyard' (ACC) and* meselée-ta *'girl'. In the nominative, the accent is shifted to the front, if the accusative vowel is short, see* fóolu *(NOM) and* gáti-t *(NOM), but it remains if the accusative vowel is long, see* meselée-t *(NOM). […] Usually, the accent is not affected if a noun is modified by a possessive suffix, except in the genitive case. The genitive is characterised by an accent on the last syllable, see* foolí *(GEN),* gaté *(GEN),* meselée *(GEN). The accent even moves further to the right, if the noun is modified, see* fooli-sí *'of his soul',* gate-sé *'of her backyard',* meselee-nné *'of our girl' (Treis, 2006: Section 2.3).*

Treis (2007) has a comprehensive chapter about accent where she distinguishes between accent-neutral (AN) suffixes and accent-determining (AD) suffixes (Treis, 2007:48-53). Treis claims that all case markers are AD suffixes, and that each case is associated with a characteristic accent position. Sometimes two case forms are distinguished by accent alone (Treis, 2007:51). In the section about Formal Means of Case Marking, Treis (2007) writes: "case is marked […] auto-segmentally by a specific position of the accent." (Treis 2007:95)[4]. More generally, she claims: "In principle, every Kambaata word has one accented syllable. This syllable is more prominent than the neighboring ones due to its increased pitch and loudness." (Treis, 2007:48). From this statement we can deduce that in Kambaata there is a pitch-accent system, and not a stress-accent system. In the last case the tonic syllable would just be louder than the other syllables. If it is true that Kambaata has a pitch-accent system, it would be interesting to compare an acoustic analysis of case in Sidaamu Afo and in Kambaata, to see if the two languages show similar tonal patterns. However, it is important to remember that pitch-accent and tone are different phenomena: In pitch-accent system, there is only one syllable in a shorter word that is tonic; in the tonal system, there can be more than one, because each tone is

[4] I am not going to give a review about the position of the accent in case marking in Kambaata. For further information, see Treis (2007:95-99).

independent from the others. Treis admits that the accentual analysis is not complete, and she urges the analysis of other prosodic features (Treis, 2007:53). Nevertheless this study is highly comprehensive and up-to-date when it comes to the study of suprasegmental features of the case markers in Kambaata.

As a final note, I want to cite some considerations about Somali, a language belonging to the East Cushitic family, but not to the Highland East Cushitic branch. Hyman (cited in Yip, 2002:140) attests that Somali uses High tone in its nominal inflection to mark case. Yip gives some declension data, cited in Table 1:

Table 1 Tone used to mark case in Somali's nominal declensions (Yip 2002:140)

Absolutive penult mora	*Genitive final mora*	*Nominative no h*	*Vocative initial mora*	
rág	rág	rag	-	m.co. ’males’
órgi	orgí	orgi	órgi	m.sg. ’billy-goat’
hooyoóyin	hooyooyín	hooyooyin	hóoyooyin	m.pl. ’mothers’
xáas	xaás	xaas	-	m.so. ’family’

As we can see from Table 1 above, case is marked by tonal differences only. The absolutive and the genitive cases have a High tone on two different syllables, while the nominative has none. Even though Somali does not belong to the same family branch as Sidaamu Afo, I consider this material worth citing, also because it throws some light on the discussion about the classification of Cushitic languages as stress accent languages versus tone accent languages that I more extensively consider in Section 2.1.5.

1.5.1 Conclusions from the Literature Review

As we could see from this literature review, it is fairly straightforward to give a complete overview of what as been written so far about the suprasegmental case marking in Sidaamu Afo, because the research on this matter is scarce. Yri understands the importance of the interaction between tone and case, and as a contribution to this matter he marks all the examples is his grammar with an accent sign on the high tone (Yri, 2007:12;29). Kawachi gives a case-based, although scattered and incomplete, explanation of the change in the tonal pattern of a noun, but does not seem to understand the descriptive importance of his theory because he does not mark the examples in his grammar with a sign on the high tone. Treis (2006;2007) writes about the role of accent in case marking in Kambaata. Yip (2002) attests the role of tone in nominal case marking in Somali.

1.6 Organization of the Thesis

This thesis contains six chapters. Chapter 1 gives the linguistic background for the present research. Chapter 2 presents the theoretical framework about tone and case that is needed in the analysis of the data. Here I shall look at the role played by tone in morphology. Chapter 3 is about the method used in the field and in the subsequent analysis. Chapter 4 gives an introduction to the grammar of Sidaamu Afo. The main focus will be on the two nominal classes k and t, but I shall also provide a short description of other grammatical features of Sidaamu Afo. Chapter 5 is the core of the thesis, and it concerns the findings from the analysis of my data. This chapter is divided in subchapters that focus on three basic cases, nominative, genitive and accusative. Chapter 6 presents the some hypotheses about the use of tonal variation to mark case in Sidaamu Afo, it also gives some conclusive remarks, and some ideas for further research.

2. Theoretical Background

Speech includes a broader range of phenomena than just strings of vowels and consonants. In this range we have to name phenomena such as for example accent and syllable length, which can be necessary to distinguish one word from another. In European languages it is also important for speakers to produce and recognise a certain intonation in the utterance of the sentence, in other words particular patterns of pitch, so that both the speaker and the hearer agree that, for example, a sentence is a question and not a statement. All of these aspects, i.e. stress, pause, pitch, intonation, and length constitute the prosodic, or suprasegmental, properties of speech. They are not properties of single consonants or vowels; rather they accompany the segmental strings adding phonemic, grammatical, syntactical or discoursal information to it. Even paralinguistic information can be added by stress, pausation, pitch, intonation and segment length, like for instance the speaker's emotions about the utterance.

The aim of this chapter is to present the theoretical assumptions about the use of tonal patterns to convey grammatical meaning, and in particular to mark case. The central topic of this chapter will therefore be tone. I argue that we need two definitions of tonal languages. The first is a narrow definition, and the most classical definition used in the literature. It includes only those languages that use differences in tone to express different lexical items. Therefore the tonal languages that are classified within this definition are also called **lexical tone languages**. The second definition is a broader definition where the lexical realization of some morphemes will be sufficient to categorize a language as a tonal language. As we shall see from the analysis of my data in Chapter 5, this is the definition that is most appropriate for this thesis.

The chapter also gives some assumptions about case. The limited scope of the thesis does not allow depicting a lengthy description of the different theoretical understandings of the notion of case. As Butt (2006) puts it, "a straightforward

comparison across theories is doomed to fail […] because the notion 'case' means different things to different people." (Butt, 2006:2). The assumptions about case that will be needed in this thesis are therefore going to be limited to only a few basic postulations and those core notions most linguists agree on (Butt, 2006:3).

2.1 Tone

2.1.1 Tone, Pitch and Fundamental Frequency (F_0)

As Yip (2002) emphasizes, a discussion about the definition of tone needs to begin by distinguishing three different terms: tone, pitch and F_0. Tone is a linguistic term, pitch is a perceptual term and F_0 is an acoustic term.

Tone refers to a phonological category that distinguishes two words or utterances. It is only a term relevant for language and language description, and only for those languages in which pitch plays some linguistic role (Yip, 2002:5). Tone can be defined as a property based on the contrastive use of pitch (Odden, 2005: 337). When pitch variations affect the meaning of a word, they are called tones (Ladefoged, 2006:248). Variations in tones can convey lexical information about the meaning of a word, in the same way as the substitution of a consonant or a vowel does in words that constitute a minimal pair, or about grammatical information regarding the function of the word in the sentence (Ladefoged, 2006:253).

Ladefoged defines **pitch** not as "an acoustic property – an aspect of the sound wave that you can measure" but as "an auditory property – something you hear" (Ladefoged, 2003:75). What the listener hears as variations of pitch are the variations in the frequency of vibrations of the vocal folds. This auditory property of the sound "enables the listener to place [the sound] on a scale going from low to high (Ladefoged, 2006:23). The pitch is perceived as higher the more frequently the vocal folds are vibrating. Of the several factors that determine the pitch of the voice,

altering the tension of the vocal folds is the most used way of producing the variation that is needed in speech (Ladefoged, 2006:247). When the vocal folds are stretched, the pitch of the sound will be higher (Ladefoged, 2006:248).

Working with data from a fieldwork setting, it is possible to use the recorded sentences to analyze the acoustic correlate of pitch[5], which is the **fundamental frequency** of the sound wave. It is possible to determine the pitch of a sound by observing the peaks in the waveform. Because each opening and closing of the vocal folds causes a peak of air pressure in the sound wave, by observing the rate of occurrence of the peaks in the spectrogram, we can measure the frequency of the sound, and therefore its pitch. (Ladefoged, 2006:23). The fundamental frequency is expressed in hertz (Hz) and gives us the number of times the vocal folds open and close per second (Gussenhoven and Haike, 1998:5).

2.1.2 Lexical, Morphological and Syntactic Use of Tone

A lexical tone language is defined as a language that uses pitch contrasts to distinguish words from one another. Ladefoged (2006) defines tone as variations in pitch that affect the meaning of a word. A difference in tone is a meaningful part of a word, just as a difference in consonant or vowel quality is, and they all are part of the lexical information about a word that speakers have stored in their mental lexicon (Ladefoged, 2006:248-249). Chinese is one of the most cited examples of lexical tone languages.

Another way tone is used in language is to convey morphological meaning. Ladefoged (2006) cites Igbo, a language spoken in Nigeria, which uses high tone to

[5] More information about the way I conducted the acoustic analysis of the fundamental frequency of the sound wave in Section 3.2.

express the idea of possession (Ladefoged, 2006:249). In this sense the tone language uses variations in pitch to convey a grammatical feature that in other languages is expressed with a preposition (in English *of*) or with an affix, i.e. segmentally expressed case, as in Latin or German. Another example cited by Ladefoged is the tense system of Edo, another language spoken in Nigeria, where the marking of syllables in the pronoun and/or the verb with high or low tone can convey three different tenses, the habitual/timeless tense, the continuous tense and the past tense (Ladefoged, 2006:249).

Ladefoged (2006) asserts that there is another universal way of using variation in pitch: to convey syntactical information about an utterance. All languages use pitch to mark the boundaries of syntactic units. Whenever a grammatical unit is completed, nearly all languages signal this completion with a falling pitch. On the other hand, incomplete utterances often have a rising intonation, which the speaker uses to convey to the hearer that there is something still to talk about (Ladefoged, 2006:247-248).

2.1.3 Level Tones and Contour Tones

When it is necessary for a speaker to reach a given point in her pitch range in order to obtain the pitch variation that is meaningful in a given language, we talk about a language that makes use of **level tones**. We can classify a language as a level tone language when a syllable has to be pronounced at a certain pitch height to communicate a certain meaning to the hearer. The pitch height in question is not absolute for every speaker, but depends on the pitch range of the speaker. Level tone languages are the most common and they eventually require just rising and falling pitch in addition to single tone targets (Ladefoged, 2006:250).

A **contour tone** language requires the syllable to be said with a pitch movement (Gussenhoven, 2004:26). These gliding movements from one pitch, for example low,

to another pitch, for example half-high, are the actual target of the speaker (Ladefoged, 2006:250).

2.1.4 Paradigmatic and Syntagmatic Dimension

Gussenhoven (2004) writes about two dimensions of the tone alternations. Whereas a **paradigmatic** dimension is the number of tonal contrasts possible on a given syllable, the **syntagmatic** dimension is the number of positions in a word where these contrasts are used (Gussenhoven 2004:26).

Regarding the paradigmatic dimension, we can have from two (High tone and Low tone) to ten different contrasts if we include contour tones. Gussenhoven (2004) reminds that it is sometimes difficult to establish the number of contrasts, because they may depend on register variations or segmental positions (Gussenhoven 2004:27).

As for the syntagmatic dimension, it is relatively rare to encounter an unrestricted tone language, i.e. a language that allows pitch contrasts in every syllable. Most tone languages are restricted: they can use "a number of tone patterns […] abstracted from the syllables in the word", and in that case we talk about **word melodies** or "a single melody [that] is abstracted from its location in the word", what we call **accent** (Gussenhoven, 2004:27).

2.1.5 Tonal Languages versus Accentual Languages

Sidaamu Afo is not being attested as a lexical tone language in the literature. Sasse (cited in Treis, 2007:48) argues that East Cushitic languages use accent or tone to convey grammatical significance, and not lexical meaning. Tosco (cited in Treis, 2007:48) speculates that the difference between Highland East Cushitic (HEC) languages and Lowland East Cushitic (LEC) languages is that HEC are stress accent

languages, while LEC are tonal accent languages. As we already saw in Section 1.5, Somali is attested as a language that uses tone to mark grammatical meaning.

2.1.6 A Broader Definition of Tonal Languages

The distinction between tone languages versus accentual languages is treated extensively in Yip (2002). Yip argues that the classical definition of lexical tone language undermines the fact that accentual languages are a subclass of tone languages:

> *There is no absolute division between accent languages and tone languages, just a continuum from 'accent' to 'tone' as the number and denseness of tone increase, and they become freer to move around (Yip, 2002:4).*

Yip (2002) claims that the classical definition of tone languages leaves out this subclass, and proposes a more inclusive definition of tone languages from Hyman:

> *A language with tone is one in which an indication of pitch enters into the lexical realization of at least some morphemes (Yip, 2002:4).*

In the next section, I give some theoretical assumptions about case, and define the terminology used to refer to tonal variation in case marking. I also describe a possible explanation of why tone has become suprasegmental in African languages.

2.2 Tone and Case

2.2.1 Some Core Assumptions about Case

Blake (2001) defines case as a system that shows the relation between a dependent noun and its head. The dependent noun is marked with some device so that it shows its dependency to the head. The verb is the most natural choice as the head of the clause, since it determines what arguments need to be expressed (Blake, 2001:1). Butt

(2006) adds that case is the expedient that makes explicit the semantic relationship between nouns and verbs (Butt, 2006:4). Different theoretical understandings of case are based on different criteria: semantic, syntactic, and pragmatic parameters are often used to separate different morphological cases from each other (Comrie, 1989:124). For the purpose of the present work, it is only relevant to emphasize that whenever the relationship between the dependent constituent and the head is achieved by modifying the dependent noun by means of inflectional endings or tonal marking, we talk of the case system of the given language. This system is realized with a set of case forms that constitutes the paradigm of the nominal phrase. The forms implement the need in the communication to distinguish 'who' from 'whom' in 'who is doing X to whom' (Song, 2001:140). As we shall see from Table 3 in Section 4.3.1.3, the segmental paradigm with the inflectional endings for Sidaamu Afo has been worked out in the literature. This thesis will investigate the suprasegmental paradigm of the nominal phrase.

2.2.2 Superfixes

Section 2.1.2 described how morphological distinctions are expressed by tone variation. Since this is the main topic of the thesis, I introduce the terminology to refer to this kind of tone variation in this section.

One of the most common morphological processes involves a **modification** of the base of the word. The modification can be total or partial. In the first case it is also called suppletion, while in the second case it can involve for example vowel change or an accent, or a tone. Matthews (1991) cites Italian as an example of a language where a modification in the accent of the root of a verb happens in association with a process of affixation. This phenomenon is used in the declination of the imperfect indicative compared to the present indicative. On the other hand, Matthews cites Birom, a language spoken in Nigeria where the sole variation of tone expresses

morphological derivation from a verb to its derived noun. Without regard to the tone on the verb, the noun has a High tone (Matthews, 1991:140-141)[6].

Bauer (2003) proposes the term **superfixes** to label morphs that are realized suprasegmentally. He argues that since those morphs are not added on top of other morphs or underneath them, they should be called **simulfixes**, but that this term is not generally implemented in the literature (Bauer, 2003:35).

2.2.3 A Diachronic Consideration about Expressing Case by means of Tone

As can be seen from the discussion of past research on Somali in Section 1.5, and on the morphological use of tone in Igbo in Section 2.1.2, case in certain African languages can be marked by tonal differences only. Here I want to refer to Creissels (2000:234) that gives a diachronic explanation of tonal case in Western Bantu languages: case expressed with tonal differences result from the loss of the distinction between a definite and an indefinite form of the noun. Childs (2003) suggests that the independence of the tone from the segmental level to which it is associated is due to the mobility of the tone. If the tone may move to a stable position in the word irrespective of the presence of a given segmental bearing unit, the segmental unit may disappear in the course of time, and the tone live on without it (Childs, 2003:78).

In this chapter I described the theoretical frame of the present work. In order to explore the use of tonal variations in case marking in Sidaamu Afo, it was necessary to find a definition of tonal language that would be at the basis of the discussion of the findings from my data. I ended with a broad definition of tonal language: the presence of morphemes realized with tonal variations is enough to define a language

[6] There is a difference in the realization of the tonal modification in monosyllables and disyllables, but the details go beyond the scope of this thesis (Bouquiaux cited in Matthews, 1991:141).

as a tonal language. I distinguished three terms that are often used: tone, pitch and fundamental frequency, corresponding them to three different dimensions, linguistic, auditory and acoustic respectively. I talked about three different uses of tone: lexical, morphological and syntactic. For the scope of the thesis, it is the morphological use of tone that is most interesting. I also defined tonal versus contour tones. The second part of the chapter was devoted to a brief discussion of some theoretical assumptions about case. I described some core notions of case and a terminology that is used to designate suprasegmental tonal feature.

3. Field and Method

This thesis is based on my own material, collected during five weeks of fieldwork in Awasa in southeast Ethiopia in the spring of 2006. Prior to this trip, I conducted a small pilot study in 2005, which suggested a tone alternation in Sidaamu Afo[7]. The result of the fieldtrip is a corpus of 785 sentences. During my stay, I worked daily with three consultants, eliciting and recording the sentences, and making all the transcriptions. The consultants judged the data about its grammaticality. I also ran an acoustic analysis of the fundamental frequency of the recordings.

In this chapter, I describe the method that I used to collect the material for this thesis. Section 3.1 describes how I conducted the fieldtrip and presents the consultants. In Section 3.1.1 I define the criteria I used in selecting the list of words I worked with; I discuss a weakness about this list I discovered after returning from the fieldwork; I also discuss pros and contras about eliciting the material from a list of nouns. Section 3.1.2 illustrates the process I followed in eliciting the data and describes a couple of challenges that I encountered in the elicitation. In Section 3.1.3 I discuss the recording of the data and give some technical information about the device I used in the recording. Section 3.1.4 describes the process of the transcription. In Section 3.2 I give some technical information about the acoustic analysis of the fundamental frequency.

[7] I worked for a couple of days with one consultant in Awasa. The material I collected in the pilot study is not used in this thesis because the method I used in the elicitation is different from the one I eventually decided to use. However, the pilot study was really helpful, because it made me aware of some problems about the recording media that I had not thought of in advance. More about it is found in Section 3.1.2.2.

3.1 The Fieldwork Setting

The data was collected during a five weeks' fieldtrip. Due to the limited time I had, I worked with three consultants, Ato Belay, Ato Mulugeta and Ato Taddele[8]. Ato Belay was in his late twenties, Ato Mulugeta was in his mid thirties and Ato Taddele was about fifty years old. They were all native speakers of Sidaamu Afo, and they also spoke English and Amharic. Most of the research was carried out in English, which served as a lingua franca in the elicitation of the sentences. Since I was not able to find any woman that could speak any English, I was, unfortunately, not able to include any female consultants. During those weeks, I worked with the consultants a couple of hours a day, and used the rest of the time to transcribe the material and to run an acoustic analysis of some of the sentences to make sure that I had not forgotten to ask about something, and to make sure that the recording I had was audible. I also had to prepare the material I needed for the next session.

3.1.1 Relevance of the Data

For the purpose of my thesis I needed to collect sentences where some preselected nouns appeared in all the basic cases I was going to investigate, that is nominative, genitive, accusative, as well as the predicative (PIV)[9] in identificational sentences with the copula suffix requested from the nominal class of the noun, that is such sentences as "It is an X" (Yri, 2007:94). Furthermore I wanted to collect all the nouns both as unmodified and modified nouns in the nominative and in the genitive, so that I could catch a possible tonal difference between, for example, the word *mine*$_{\text{k}}$

[8] The term "Ato" corresponds to the English word "Mr." in Sidaamu Afo, and it was the title I used when talking with and about my consultants.

[9] A note about a convention adopted throughout the thesis: the abbreviation PIV will refer to the predicative to which the copula is connected in Sidaamu Afo. The PIV is the element of the predicate of the sentence, which complements the subject by means of the verb in the copula.

'house' as the unmodified subject of a sentence, and the same word used as the nucleus of a nominal phrase which is the subject of the sentence. In addition I asked every consultant to pronounce the nouns alone, in the citation form, as we would say "horse" or "tree" compared to "the white horse" or "a big tree". This happened to be a more difficult task than I expected, as we shall see in Section 3.1.2.2. As long as it was possible, I wanted to ask the three consultants the same sentences. I wanted to be able to check if the sentences I got from one of them sounded plausible to the others, and that they were not merely a word-for-word translation from the English sentences the consultant heard from me.

I created a list of 20 nouns, 10 from the k-class and 10 from the t-class. In addition I used two proper names, a masculine (*ʔamalo*$_{k}$ 'Amalo') and a feminine (*dancile*$_{t}$ 'Dancile'). The proper names were included because I wanted to see if they behaved differently in the tonal pattern than common nouns. Proper nouns are not inflected in case, and therefore do not show any segmental case marking. As Blake (2001) reminds us, core case marking may be sensitive to the category of the stem, and so proper nouns may behave differently from common nouns (Blake, 2001:91).

Since there are no monosyllables in Sidaamu Afo, I chose both disyllabic and trisyllabic nouns for my list. The nouns in the list are mostly high frequency words of everyday life. Some of the words I used were chosen because they usually appear in the same context with a variation in gender (as *ʔama*$_{t}$ 'mother' and *ʔanna*$_{k}$ 'father') or with a variation in number (as *mine*$_{k}$ 'house' and *minna*$_{t}$ 'houses'). Other words were chosen because they belong to both classes k and t but with different meanings (as *manco*$_{t}$ 'woman' and *manco*$_{k}$ 'man' or *rodoo*$_{t}$ 'sister' and *rodoo*$_{k}$ 'brother'). A weakness in my list is that all the trisyllabic nouns I have belong to the t-class. At the time of recording, it did not seem to be important for my analysis to collect trisyllabic nouns from both classes, but it later occurred to me that it would have been useful in the comparison between disyllabic and trisyllabic nouns, as we shall for example see in Chapters 5.

3.1.1.1 Pros and contras about eliciting sentences from a list

Already during my first stay in Awasa in April 2005, I knew I was not going to collect spontaneous speech in natural communicative sentences, even though there are strong reasons for such a choice (Mithun, 2001:53). Collecting spontaneous speech demands much more time in the field than the few weeks I was going to have. In the pilot study conducted in 2005, I decided to record a text where a specific target word appeared. I found out quickly that also this method was too extensive to be accomplished in the time I was going to spend on the field. Even though the text would add a context that would make it easier for the consultant to produce sentences that were valid semantically, pragmatically and syntactically, it would not have been possible for me to collect an amount of sentences where the target word appeared systematically in the different cases.

I decided that I was going to elicit the sentences working with the list I described above. I am aware that certain aspects of the phonology cannot be observed in the pronunciation of simple sentences, and that they first emerge when used in more complex, spontaneous and connected speech (Mithun, 2001:36-37). The main reason why I opted for the elicitation method is that I knew that the material needed to be manageable and collected systematically within the limited amount of time that I had, both in the field and in the analysis. Since this is the first attempt to give a description of tonal pattern in some of the cases in Sidaamu Afo, I leave the recording of other kinds of utterances to further research. First when the tonal contrasts in Sidaamu Afo are described, it will be interesting to record and examine tonal contrasts and intonational patterns. Another weakness of this method is that it does not provide data in which it is possible to examine the influence of fast speech on the tonal pattern. As Chelliah (2001) put it:

> *Fast speech phenomena rarely show up in elicitation, not only because there is no running discourse which provides the environment for fast speech phenomena, but also because speakers carefully monitor pronunciation, often backing up and correcting themselves when such phenomena occur. Speakers sometimes dismiss forms produced in fast speech as "errors" (Chelliah, 2001:163).*

The findings in this thesis need to be proved in several contexts, with a broader range of words and in different kinds of utterances, as this study is only a preliminary step towards the description of such a complex matter as tonal pattern in a poorly described language.

3.1.2 Eliciting the Data

For each session, I prepared a list of sentences in English and I asked the consultant how he would render the same meaning in Sidaamu Afo. I tried to work with a noun at a time and we could spend an hour talking only about e.g. *hak'k'a*$_{t}$ 'tree' in all the possible grammatical contexts, first alone in its citation form and then as the subject of a sentence like "a tree is drying out". The same noun was subsequently modified by different means as adjectives in "the big/little tree is drying out" or relative clauses as in "the tree that is near the lake is drying out". Each noun was at last inflected in the genitive, both in the unmodified and the modified form, and in the accusative, and at last also used as the PIV in sentences with the copula.

Every time I submitted a sentence to the consultants, I only used English, and I decided not to try to speak Sidaamu Afo, even when I was able to anticipate the answer of the consultant. The idea was not to interfere whether with the translation or with the intonational pattern of the answer. On the other hand I tried to repeat some of the sentences at the end of the session, striving to imitate the intonation of the sentence, for two reasons: I found this imitating process quite useful in training my ear to identify slight differences between very similar sentences, and I understood pretty soon that the consultants enjoyed this part of the job probably because it gave

them the possibility to be my teacher and correct my pronunciation until they were satisfied, and not merely be the translator of hundreds of sentences.

3.1.2.1 Grammaticality judgements

During the last days I spent in Awasa I double-checked all the sentences I had some doubts about with the other consultants. They listened to the sentence in Sidaamu Afo that I wanted to check and translated it to English again. I did not tell the consultants what I expected the sentence to mean, because I did not want to affect the translation of the sentence from Sidaamu Afo into English. I never asked a consultant to listen to his own sentences, because I did not want him to decide if he had misunderstood me or not.

In this last part of the work I used Amharic as much as I could as lingua franca, because I wanted to make sure we were talking about the same meaning of the sentence. One of my consultants seemed to talk English pretty well, but I understood quite soon that he had troubles understanding sentences with the verb in the past and with sentences where the attribute to the noun was a relative sentence. I also used some time to randomly check about one third of the sentences, because I wanted to be sure that native speakers judged the material grammatical and natural.

3.1.2.2 Problems encountered in the elicitation of the sentences

In the eliciting work I encountered two main problems: I had difficulties getting the consultants to tell me a word in its citation form, and I had to deal with the consultants' need of finding a meaning that could bind all my sentences together.

In the beginning the consultants were reluctant to pronounce a word in isolation. They tended to add a pronoun or an adjective. For example if I asked my consultant to tell me the word "mother" in Sidaamu Afo, I was expecting to hear *ʔama*$_t$ 'mother', but I could get *ʔamaʔya* 'my mother' or *danca ʔama* 'a/the good mother'. It took a while for them to understand why I had to record the pronunciation of the word alone

and they kept asking me whose mother I was talking about[10]. One of the consultants was not even aware that he changed the meaning of the utterance he was asked to translate, and kept saying that *ʔama* 'mother' and *ʔamaʔya* 'my mother' meant the same. After a couple of sessions I managed to resolve the problem by saying that the word *ʔama*$_t$ 'mother' recorded alone was a retrieval system that permitted me to find all the sentences about the argument "mother" on the tape in an easy and fast way. The problem was solved, but the fact that I encountered resistance when I asked them to pronounce the citation form of a word could tell me something about the lack of a citation form as a natural utterance in the everyday life. After a few days I had the opportunity to visit an elementary school and I took a book with a lot of pictures with me, because I wanted to hear the children's response when I pointed at one picture, as an empirical experiment. I chose easy things as pictures of water or a horse and I got such answers as "it is a little river" or "it is an old horse". It was difficult to understand much of what the children were saying because they all wanted to talk together, and some of them insisted on talking Amharic even though I asked them to talk Sidaamu Afo, but none of them I could actually hear used the word in its citation form.

The other problem I had to deal with was the consultants' need to get an overall meaning from the sentences they had to translate. For example, I asked one of my consultants the sentence "the price of the big chicken is high" because I aimed to obtain a recording of the word *lukkicco*$_t$ 'chicken' in the genitive with an attribute. I do not talk Sidaamu Afo, and a long sentence full of new words therefore represents a significant challenge to me, so I tried to achieve the target sentence by getting all the new words in simpler contexts. In this case for example, I got the sentence "the price

[10] The answers I got about the noun ʔama$_t$ 'mother' suggest that this noun always appear together with some device that points to a specific referent in Sidaamu Afo. However tempting it is be to elaborate this matter, it falls beyond the scope of the thesis.

of the big chicken is high" by means of other sentences that I was not looking for, such as: "A man has two chickens", "One chicken is big, the other is small", "The man goes to the market with the two chickens", "A woman buys the big chicken" and then at last "The price of the big chicken is high". When I got the target sentence I usually listened to all the sentences to check the audio, and if necessary asked the consultant to repeat a sentence that was not audible. The consultant I was working with on this material was disappointed when I told him that we could move on to the next session, and asked me what happened to the other chicken.

Other sentences were not accepted by my consultants because they could not understand the actual situation I was talking about. I asked a consultant the following sentence: "The mother who has two children is eating", but the translation I got meant 'The mother and the two children are eating'. When I tried to explain that I was talking only about the mother that has two children, for example to distinguish her from another mother that has only one child, the consultant asked me why the children could not eat the food as well.

3.1.3 Recording of the Data

I considered using my iPod connected to a microphone to record the data, because I wanted to get digital recordings right away in a portable and unobtrusive way. Several discussions on the Internet about the appropriateness of using iPod recordings in linguistic analysis[11] made me change my mind and I pondered using a cassette recorder. The problem I would encounter with the cassette recorder would have been that I could not begin working with the acoustic analyses of the data until I came back to Oslo, where I could transform the analogue recordings into digital ones. It was

[11]Some of the problems that I was made aware of by such discussions are related to the sampling of sound files.

very important to get a preliminary analysis of the material already while being on the field, because I knew I would not be able to go back to Africa if some of my recordings were not good enough. So I decided that I needed the material to be recorded digitally. Other advantages about recording the files in this form are that it is easier to archive them in a corpus and that it is possible to copy the files without losing sound quality. As a compromise I resolved recording directly onto my computer, even though it would have been more comfortable for my consultants to use the iPod because it is more inconspicuous than the laptop. I knew my consultants were not accustomed to computers, and I wanted them to feel as comfortable as possible, but I needed to get a quality of the sound file that was good enough for the acoustic analysis I knew I had to run.

The program I used to record the data is called Audiocorder (Black Cat System, 1998). It is a computer program that is available only for Macintosh. I have a Mac PowerBook G4, and I used a microphone by sE Electronics (USB1000A). Although the program is quite sophisticated it was unproblematic using it: it works like a common tape recorder with a record and a stop button. The sounds were recorded as AIFF files and then converted to WAV format for the acoustic analyses with Praat (Boersma and Weenink, 2005). The audio was sampled at 44 kHz, with a sample size of 16 bits. I chose to record each sentence as an independent sound file. In this way I was able to retrieve a sentence at a time, and that allowed running an acoustic analysis of the sound wave without cutting the file in advance. Audiocorder classifies each file with the date and the time the recording began. The conventions I used in labelling the spectrograms are explained in Section 3.2.3.

3.1.4 Transcribing the Material

I immediately transcribed every sentence phonemically the same day it was recorded, because I wanted to be able to discuss potential difficulties with the consultants. I had to write the transcriptions by myself. None of my consultants was accustomed to

using the Latin alphabet in writing Sidaamu Afo, because they all went to school before 1992, when the orthographic reform replaced the Amharic alphabet with the Latin. They were all literate, but they were clearly not used reading, and everybody declined the offer to read my work. I could not use the scarce time I had to instruct them in reading the transcriptions. Together with the transcription, I wrote down morphological glosses about each sentence, primarily about the morphology of the nominal phrase. I also made notes about the grammatical relations in the sentence.

3.2 The Acoustic Analysis of the Fundamental Frequency

The material collected in the field was extensively analyzed when I got back to Norway. I arranged the data systematically out of different variables: which class the nouns belonged to, the number of the syllables, the case in which the nouns were inflected and the absence/presence of a modifying attribute. Studying the tonal pattern in speech means analyzing the fundamental frequency of the sound wave, which is the acoustic correlate to pitch. The term that is usually used in the literature to refer to the acoustic analysis of the fundamental frequency is **pitch tracking**. As I shall explain in the next section, I used a computer program that made me able to evaluate the spectrogram's pitch curve. Even though I ran the pitch tracking analysis on every sentence in my corpus, I only used a fraction of it in the discussion of the findings in this thesis. I chose the examples that were most representative for the phenomenon that was the topic of the discussion. In a couple of occasions, the examples in the discussion were chosen because they were problematic in the argumentation.

The main advantage of using a computer based analysis of the data, compared to the old-fashioned evaluation based on the researcher's perception of the material, is that the reader does not need to rely in the researcher's subjective judgement of the target segment. As Maddieson (2001) claims,

> *Nowadays, phonetics is a discipline in which simple observation and introspection are considered insufficient in many domains, and conclusions are expected to be supported by appropriate documentation and numbers (Maddieson, 2001:213).*

3.2.1 Pitch Tracking using Praat

In Ladefoged (2003) a whole chapter is dedicated to pitch tracking (Ladefoged, 2003:75-103). He talks extensively about how to use different computer programs. I chose to use Praat (Boersma and Weenink, 2005) in my analysis mainly because it is a freeware. Ladefoged (2003:84) arguments that this program, compared to other similar programs, is more complicated to use because it gives the possibility of investigating a large number of processes. I found the online user manual very useful, and I did not encounter problems using it.

Praat has the command pitch that creates a pitch object[12] from a selected sound file. The program uses two arguments that control the recruitment of the candidates: time step and pitch floor/ceiling. The **time step** is the duration of the partition of the sound wave that the program uses in calculating the frequency. This time measurement interval is expressed in seconds. The **pitch floor** and the **pitch ceiling** are the parameters that fix the lowest and the highest fundamental frequency that are considered as candidates in the recruitment of the analysis. The pitch floor determines the effective length of the analysis window. The program calculates the length of a cycle of the waveform, so that the time step used in the analysis will be long enough to include at least two cycles of the waveform. The window length must be increased if there is a very low pitch (Ladefoged, 2003:77-78). In the standard value, Praat uses a step time of 0.75 sec, a pitch floor of 75 Hz, and a pitch ceiling of 600 Hz. Working

[12] A Pitch object represents periodicity candidates as a function of time. […] It is sampled into a number of *frames* centred around equally spaced times (Boersma and Weenink, 1996).

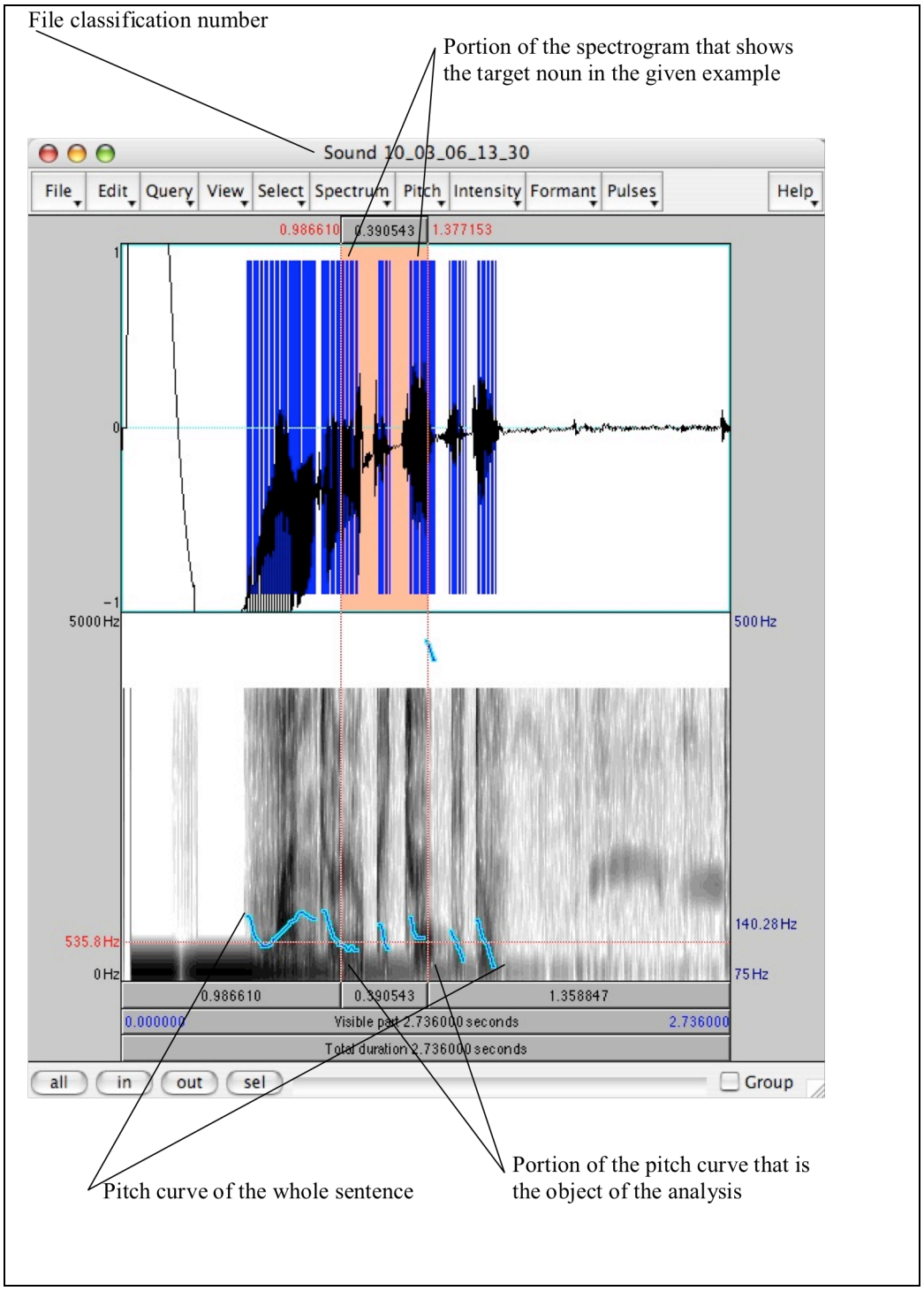
with three male consultants I found out that the values give the most accurate pitch tracking (Ladefoged, 2003:81). Even though Ato Taddele had a lower fundamental frequency than the other two consultants, a pitch floor of 75 Hz was high enough for the purpose of pitch tracking.

3.2.2 The Interpretation of the Pitch Curve in the Spectrogram

The pitch object is the result of the command pitch on Praat, which is represented graphically as a curve in the spectrogram. Looking at the portion of the curve that correspond to the target noun we can see in all syllables if the pitch is low, high or somewhere in the middle, corresponding to the **level tones** Low tone, High tone and Mid tone; or if the tonal pattern shows a variation in the pitch as rising or falling, corresponding to the **contour tones** we described in Section 2.1.3.

In Figure 3 below I enlarge one of the spectrograms that I collected in tracking the pitch of a sentence, so that the reader will be aware of which information I was interested in looking at when reading the spectrograms:

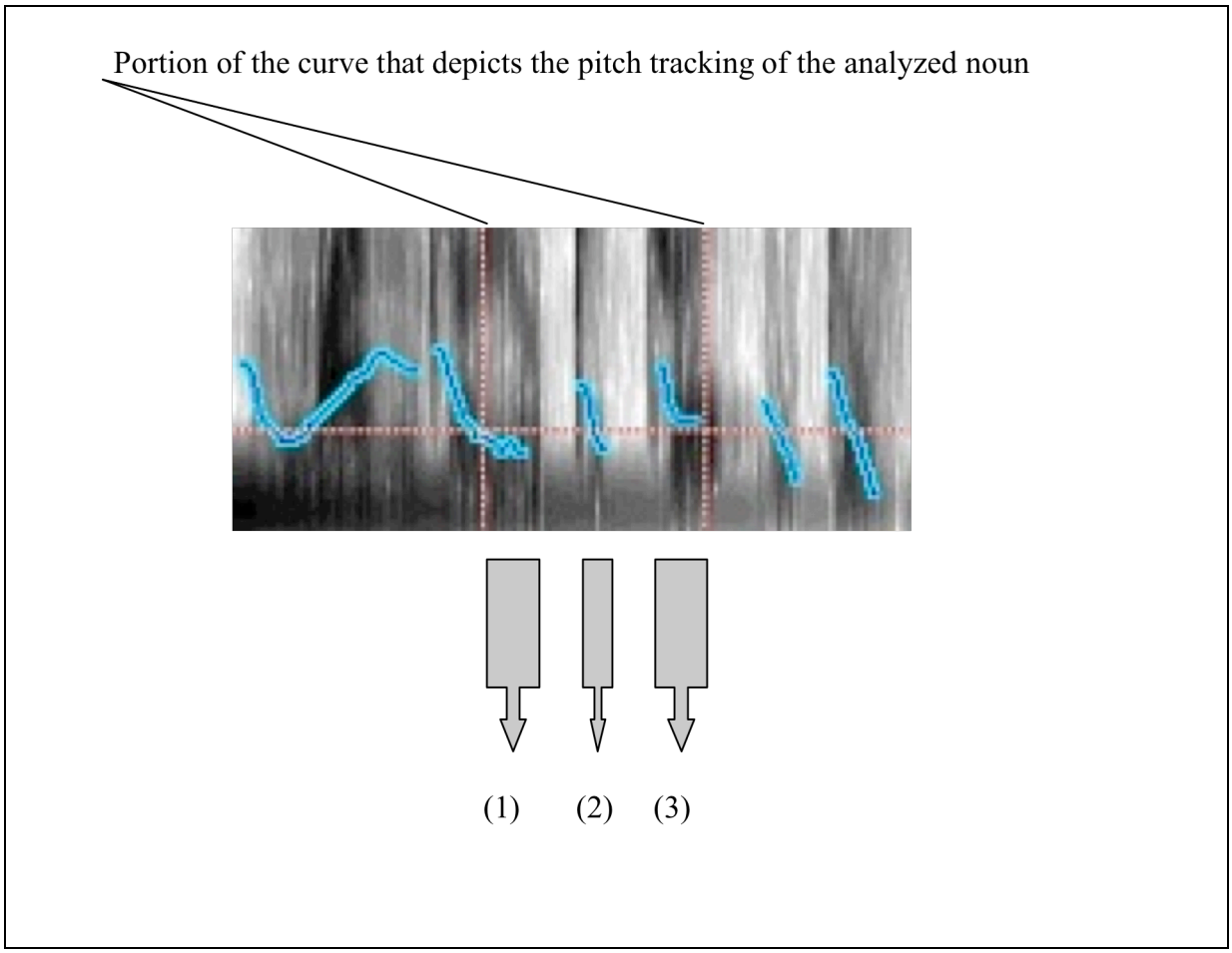
Figure 3 Graphic explanation of a spectrogram



A portion of this spectrogram is enlarged in Figure 4 below, in order to explain how the interpretation of the spectrograms was done. In this figure, we can see the pitch curve of the whole sentence *manco lukkicco hiḍḍitu*, with two dotted vertical lines that delimit the noun that is the target of the analysis, that is *lukkicco*. The portion of

the curve before the first dotted line corresponds to the noun *manco*, while the portion of the curve after the second dotted line corresponds to the verb *hiḍḍitu*:

Figure 4 Interpreting the tonal pattern of the target noun



Every spectrogram contains dark bands at various frequency levels. These bands are called **formants** and appear more or less horizontally on the figure. To distinguish the vowels from the consonants, we have to look at the portion of the spectrogram where the formant frequency is relatively stable, in comparison to the formant transitions that correspond to the consonants (Ladefoged, 2001:36-37). The procedure given above does not use other cues that are operationally useful while listening to the sound string, and it oversimplify the interpretation process. It is for example possible to use the cursor to isolate a specific portion of the sound file, and thus to play the sound file partially and from any given starting point. In this way one can achieve to find the point where a given vowel begins, and to listen, for example, to /ukkicco/

alone, without the initial liquid. In Figure 4, just under the portion of the spectrogram that depicts the noun *lukkicco*, there are three arrowed callouts, (1), (2), and (3). The wideness of the arrows reflects the duration in time of the three vowels /u, i, o/ in *lukkicco*.

3.2.3 Conventions in Labelling the Sound Files and the Corresponding Spectrograms and Examples

The sound files that correspond to the sentences in the corpus were automatically labelled with the date and the time of the recording by the computer program Audiocorder, used to record the data. For example, the sentence recorded on the 10th of March 2006 at 13:30 was originally labelled as the sound file "Sound 10_3_06_13_30" (i.e. Figure 3 and Figure 4). While I decided to maintain this convention in the stored sound files that were analyzed, I wanted to simplify the name even further in the captions of the spectrograms and in the corresponding example. Thus I decided to drop the numbers corresponding to the year 2006 because they were not adding any information to the caption. Each sound file in the corpus was collected in 2006, so writing "06" in the caption was superfluous. I also resolved to omit the subscript hyphen marks between the numbers, and to use a more transparent way to mark the difference between date and hour. As a result, every spectrogram and its corresponding example, was labelled with eight numbers: The first four numbers give the date of the recording, first the day and then the month; the second four numbers give the time of the recording, first the hour and then the minutes. The simplification adopted in the captions permitted the more intuitive notation "10.03-13:30" from the original "Sound 10_3_06_13_30". I also wrote a consonant before the date/time, in order to make it explicit which consultant was recorded. The sound mentioned above, was therefore labelled as "B-10.03-13:30" because Ato Belay was the consultant that pronounced the sentence. The three consultants explicitly gave me the permission to use their names in the thesis. I

suggested the possibility to write about the material in an anonymous way, by means of letter codes instead of their names, but they declined the offer.

Occasionally, I recorded more than one sentence in a minute. In that case, the computer program automatically saved the sound file with different endings (.1, .2, and so forth). For example, I recorded three sentences with Ato Belay on the 8th of March at 13:37. The first sound file was named B-08.03-13:37, the second B-08.03-13:37.1 and the third B-08.03-13:37.2.

Since a picture is worth thousand words, I give a visual explanation of the notation in Figure 5:

Figure 5 Example of the notation system for a sound file with its caption

In "Sound 10_3_06_13_30" the numbers correspond to:

10	3	06	13	30
Day	Month	Year	Hour	Minutes

The resulting caption for "Sound 10_3_06_13_30" is "B-10.03-13:30", where the convention is:

B	10	03	13	30
Consultant	Day	Month	Hour	Minutes

4. A Grammar of Sidaamu Afo

This chapter gives a basic description of the grammatical background that is necessary to understand the examples of this thesis. The main focus will be on the nominal category, in particular on nouns, but some information about other features of the grammar will also be given. This chapter does not represent an exhaustive description of the grammatical features of Sidaamu Afo. The work on this language is still ongoing, and some of the topics of the grammar of Sidaamu Afo are still not studied extensively enough to give a complete overview of them. This section is mainly based on Yri (2007;1990).

A review of the spelling conventions used in the thesis is given in Section 4.1. Section 4.2 refers to the ongoing discussion about how many and which word classes need to be posited in Sidaamu Afo. Section 4.3 describes the super-category of nominals as Yri (2007) defines in his grammar, and the main aim will be to distinguish the two different nominal classes, the k-class and the t-class, with regard to their morphological characteristics. The same section includes a short review of other kind of nominals. Section 4.4 is about the verbal tenses that are most relevant for the discussion of the findings in the thesis, and about the copula in Sidaamu Afo. Section 4.5 concludes with some considerations about word order in Sidaamu Afo.

4.1 Spelling Conventions

The examples in the present work are written not orthographically but in a phonemic transcription, which disregards all allophonic differences. An extensive description about the differences between phonemic spelling and the official orthography in Sidaamu Afo is to find in Yri (2004). In Yri (2004;1990) it is also described the phonemic alphabet adopted in this thesis. A few notes on some of the most peculiar items in the phoneme inventory in Sidaamu Afo will be discussed in the following. Unusually at world level, Sidaamu Afo has an implosive /ɗ/, an ejective /t'/, and a plosive /t/ on the same place of articulation, alveoli (Yri, 1990:10). Besides the

implosive /ɗ/, and the ejectives /p', t', c' and k'/, the consonant inventory includes the glottal plosive /ʔ/. All consonant phonemes may be geminated, with the exception of /h/. The vowels /i, e, a o, u/ may be short or long. Gemination and long vowels are written with two successive symbols, for example /kk/ or /aa/, and not as /k:/ or /a:/.

In the discussion of the data, I added the tone marking on the nouns that are the topic of the analysis in every given example. The tonal pattern is expressed with diacritical marks superscript on the vowels. These marks are often referred to as accent marks in the literature. An overview of the notation system of tones is presented in Table 2:

Table 2 Notation system for tonal patterns in the examples of the thesis

	Accent marks	**Diacritical marks**	**Example**
Low tone	Grave accent	/̀/	/à/
Mid tone	Macron	/̄/	/ā/
High tone	Acute accent	/́/	/á/
Falling tone	Combination acute-grave	/̂/	/â/
Rising tone	Combination grave-acute	/̌/	/ǎ/

When referring to examples from original sources, the notation of tones and stress, and the segmental transcription as well, will be the same as in the cited sources.

4.2 Word Classes

The nature of the different parts of speech there are in Sidaamu Afo is a matter of discussion, due to the limited research on the language. Yri's classification that posits three categories, nominals, verbs and particles, is adopted in this thesis. Teferra (2000:117) proposes five categories: nominals, verbs, adjectives, adverbs and postpositions. Kawachi (2007:77;180) argues for two subcategories: open classes (nouns, verbs, adjectives, adverbs, and a rest class) and closed classes (pronouns, clitics and a rest class). In this thesis only nouns of all nominals will be extensively described; verbs will be treated more superficially, and particles will not be considered at all.

4.3 Nominals

Yri defines the super-category of nominals functionally as those words that can appear by themselves as the core nominal grammatical functions subject (S) or direct object (DO) in a clause (Yri, 2007:25). Within the category of nominals, it is possible to distinguish several distinct subcategories: nouns, pronouns, demonstratives, and adjectives. On the left in the list we have the most prototypical member of the nominal category, on the right the least prototypical (sic Yri, 2007:25). Common for nominals is the fact that they have some form of case inflection. Yri (2007) points out that Sidaamu Afo uses nominalizing suffixes as derivational devices. When modified by these nominalizing suffixes, the nominals above defined as least prototypical (as for example adjectives and quantifiers) can appear in those nominal grammatical functions S or DO that would otherwise be precluded, and therefore get a more central and prototypical role in the sentence as independent and self-supporting nominals. Nominalizing suffixes have the same effects on verbs and sentences. Yri reports several examples, like *ʔikkinó-ricco* 'that which happened' (Yri, 2007:63).

Sidaamu Afo shows a distribution of the morphologically unmarked form of the nominals that is quite common in East Cushitic languages, but that is very rare at world level. Normally, in an accusative system that discriminates between nominative and accusative, the unmarked case, i.e. the zero case (sic) that coincides with the citation form of the noun, is usually the nominative (Creissels, 2000:234). In Sidaamu Afo, the accusative is the unmarked form, and the nominative takes the same inflected form irrespective of the distinction between transitive and intransitive verb.

In the unmarked form, the final vowel of the nouns can be -e(e), -a(a) or -o(o). Yri (2007) writes that the final vowel of the accusative has a high or high-low tonal pattern, which is often marked in the orthography of the language by writing the final vowel as a long vowel (Yri, 2007:24). More about the tone on the accusative is found in Section 5.3.

4.3.1 Nouns

The nouns in Sidaamu Afo are classified lexically by belonging to one of two nominal classes, the k-class or the t-class, or to both of them[13]. If a noun belongs to both classes there will be a semantic difference that is connected to the natural gender of the animate being the noun refers to. In this case, nouns referring to animate beings that are masculine in gender will usually belong to the k-class, while nouns referring to animate beings that are feminine in gender will normally belong to the t-class. For this reason there is a tradition in the literature to use the denomination of masculine and feminine when referring to the two nominal classes, respectively what Yri calls

[13] Kawachi (2007) argues that there are common nouns that do not have their own lexical genders, e.g. *manco* 'person' (Kawachi, 2007:82). Since the system is systematically and necessarily expressing the lexical class of nouns not only morphologically, but also due to agreement with the verb, I agree with Yri's classification of such names as belonging to both classes, and will translate e.g. *manco* as 'man' when belonging to the k-class and as 'woman' when belonging to the t-class.

k-class nouns and t-class nouns. Yri argues that the lack of a semantic pattern for the assignment of the class and the presence of exceptions do not justify the use of the labels masculine and feminine, and chooses to use the neutral labels k-class and t-class (Yri, 2007:25). As we shall see in the next two sections, there is a segmental difference in the way the two classes mark patterns of cases, and in their agreement to the copula -ho or -te. More about the copula is to find in Section 4.4.1. The class membership of nouns is also signalled in the verb inflection, as we shall see in Section 4.4.

Number and class marking in Sidaamu Afo are achieved by derivation and not by inflection, and are not going to be extensively described in this thesis. The only consideration that is worth noticing here is that a derivational affix often involves a shift in the nominal class of the original noun (Yri, 2007:28). For example, while *mine*$_k$ 'house' belongs to the k-class, *minna*$_t$ 'houses' belongs to the t-class. This 'division of labour' consisting of derivational affixes marking number and class and inflectional affixes marking case is not common in the literature. For example Kawachi (2007) treats the affixes marking number and class, which he calls gender, as inflectional, just as those affixes marking case (Kawachi, 2007:344;351). Kawachi (2007) distinguishes between four different categories associated with nouns, that is common vs. proper nouns, feminine vs. masculine nouns, countable vs. uncountable nouns and inherently vs. optionally possessed nouns (Kawachi, 2007:78-96). Possibly, Kawachi needs these four distinctions because he treats the derivational affixes as inflectional. Because this system is rather complicated, he thus has to posit that some nouns have three forms (unmarked, singular, plural), some have only one (unmarked), and some have two (singular and plural forms, unmarked and plural forms or unmarked and singular forms) (Kawachi, 2007:85). Yri's analysis of number and class marking as derivational affixes, and not as inflectional, gives a much simpler and more accurate description, which is adopted in this thesis.

4.3.1.1 K-class

Nouns that belong to this class are morphologically marked in two situations: 1) when they occur as the nucleus of the nominal phrase which is the subject of the clause, and 2) when they refer to the possessor of a possessive nominal phrase (Yri, 2007:26-27).

In these two situations, the unmarked final vowel of the noun *-e(e)*, *-a(a)* or *-o(o)* is replaced with *-u* or *-i* depending on whether the noun is the nucleus of a nominal phrase respectively without an attribute or with an attribute, more about this in Section 4.3.1.3.

Nouns belonging to the k-class require the copula *-ho* in predication clauses where the subject is a noun belonging to the k-class and the PIV is an adjective, or where the PIV is a noun belonging to the k-class, irrespectively of which class the subject of the clause belongs to (Yri, 2007:27).

4.3.1.2 T-class

Nouns that belong to this class are morphologically unmarked when they occur as the nucleus of the nominal phrase that is the subject of the clause.

When they refer to the possessor inside a nominal phrase, they are marked by adding the suffix *-te* to the final vowel of the noun *-e(e)*, *-a(a)* or *-o(o)* (Yri, 2007:27), more about this in Section 4.3.1.3.

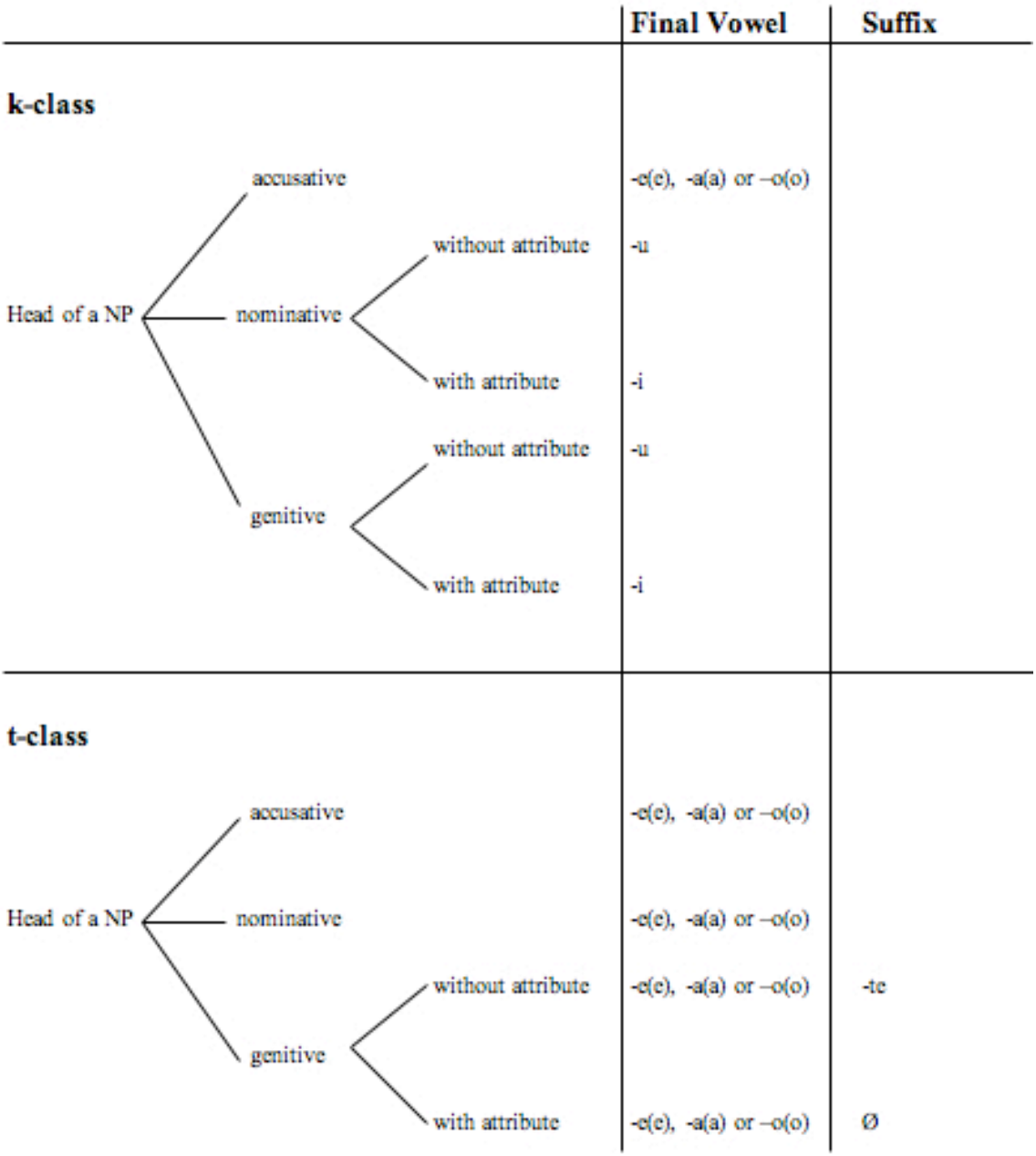
Nouns belonging to the t-class require the copula *-te* in the same environments where a noun belonging to the k-class would require the copula *-ho*, that is in the predication clauses where the subject is a noun belonging to the t-class and the PIV is an adjective, or where the PIV is a noun belonging to the t-class, irrespectively from which class the subject of the clause belongs to (Yri, 2007:27).

4.3.1.3 The segmental structure of the noun in the basic cases nominative, genitive and accusative

The aim of this section is to summarize the informations about case marking in the two nominal classes given in the last two sections. The segmental overview of the case marking of nouns belonging to both classes in the three basic cases nominative, genitive, and accusative will result graphically in Table 3 below.

As for the other cases, the so-called **oblique cases**, a small set of suffixes, and some combinations of those suffixes, are added to the basic cases of the noun to convey a wide range of meanings. The noun marked in the basic cases forms, functions as the stem for the inflection in the oblique cases. Yri (2007) observes that the suffixes are accompanied by variations in vowel quantity and tone (Yri: 2007:35). In the future, a suprasegmental analysis of Sidaamu Afo is needed to deepen the question of the connection between suprasegmental variations and meanings in those cases. However tempting, this matter cannot be a topic of discussion here, but hopefully, this thesis will be the first step in the direction of an understanding of such a connection.

Table 3 Segmental paradigm of the nominative, genitive and accusative



A discussion about the segmental inflection of case marking in Sidaamu Afo starts by positing a difference between the two nominal classes, shown above in Table 3. in this table, the notation for the tone on the ending's vowels, which Yri (2007:28) has in his review of the basic case marking, is not indicated. The aim of this section is to give a survey of the segmental structure of the three basic cases. As for the suprasegmental marking in case inflection, the matter will be treated in Chapter 5.

K-class nouns change the final vowel *-e(e)*, *-a(a)* or *-o(o)* of the accusative into *-i*/*-í* or *-u*/*-ú* in the nominative and in the genitive, according to their function and their position within the nominal phrase (Yri, 2007:28-30). In the nominative, the variation between *-i* and *-u* gives syntactic information about the noun that is the head of nominal phrase, which is the subject of the sentence; in the genitive about the possessor inside a nominal phrase.

In *manc-u nó* (man-nom.U exist.Ipf3) 'there is a man', the *-u* on the subject tells us that the noun *manco*$_k$ is in the nominative, that it is the nucleus of the NP, and that it is not modified by any element. In *ʔoll-u manc-i nó* (village-gen.U man-nom.M exist.Ipf3) 'there is a man of/from the village', the *-i* on the subject tells us that the noun *manco*$_k$ is in the nominative, that it is the nucleus of the nominal phrase, and that it is modified by an attribute, in this case the genitive *ʔollu*.

The same syntactic information about whether a noun is unmodified or modified is expressed in the genitive. In *ʔoll-u manc-i nó* (village-gen.U man-nom.M exist.Ipf3) 'there is a man of/from the village', the *-u* on the genitive *ʔollu* tells us that the noun is unmodified. In [*t'aʃʃ-u gam-i-ra nó*] *ʔoll-i manc-i nó* ([river-gen.U side-gen.M-OBL(at) exist.Ipf3] village-gen.U man-nom.M exist.Ipf3) 'there is the man from the village that is near the river', the *-i* on the genitive *ʔolli* tells us that the noun is modified by the attribute, in brackets in the example.

T-class nouns maintain the final vowel *-e(e)*, *-a(a)* or *-o(o)* of the accusative in all cases, and only add the suffix *-te* when the noun is inflected in the unmodified genitive.

4.3.2 Pronouns

In Sidaamu Afo, pronouns differ from other nominals because they do not have a coherent inflection as belonging to either the k-class or the t-class, and because they do not show the vowel alternation of *-i*/*-u* in the basic cases, discussed for nouns in

Table 3. As Yri (2007) argues, this can be explained by the fact that pronouns cannot themselves be qualified by a modifying attribute, and therefore do not need to overtly convey this kind of syntactic information. They can modify a noun, but not being modified. Most of them can fulfil the core nominal functions of subject or direct object by themselves, without a nominalizing suffix (Yri, 2007:55).

4.3.3 Demonstratives

In Yri's classification, demonstratives are nominals that can refer deictically to things. Demonstratives can appear alone in a clause, functioning nominally in the core functions S and DO; or they can modify another element in the sentence, mainly nouns, and are thus more similar to adjectives. They are case inflected in nominative and accusative and they can be inflected for oblique cases (Yri, 2007:58). They appear marginally in a couple of sentences in my corpus, both in the referring and in the modifying function. In the corpus we encounter both *kónne*$_k$ 'this (near)' og *ténne*$_t$ 'this (near)' in the nominative forms *kúni* and *tíni* respectively.

4.3.4 Adjectives

The class of adjectives in Sidaamu Afo is small. This category also includes quantifiers and numerals, the least nominal category within all the nominals: they cannot perform the nominal functions alone without a derivational suffix (see the discussion in Section 4.3). A semantic and a syntactic criterion define it: semantically they describe a property of the nucleus, and syntactically they require the same copula, –ho or –te, as the one that is required by the class of the nucleus of the subject's word group, k-class or t-class respectively. The presence of these criteria serves two goals: to separate adjectives from, for example, locatives, and to define adjectives as those words that do not occur as subjects or objects without derivational modification in contrast to, for example, nouns that can implement these nominal functions by themselves (Yri, 2007:63). Yri uses the syntactic criterion as a

diagnostic test to determine if the nominal that is used as the PIV of a clause belongs to the nominal category noun or to the nominal category adjective (Yri 2007:27-28). In my material I have a couple of uncontroversial examples of adjectives: *lobo* 'big' and *danca* 'good'. In the corpus they are only used as the modifying element to the head of the nominal phrase, which is the topic of the analysis.

4.4 Verbs

A lot could be said about the verb in Sidaamu Afo, but for the sake of the thesis, the discussion will be limited to some considerations necessary to the understanding of the examples in the thesis. The verb is the nucleus of a non-nominal clause. There are both finite verb forms and infinite. Only the first kind can form complete sentences alone. The most used finite forms in the corpus are the Past Perfective (Pf), and the Past imperfective (PaIpf). The paradigms are shown in Table 4 and in Table 5 respectively:

Table 4 Paradigm of Past perfective (Pf)

Person	Suffixes	Example	Translation
1m	-úmmo	rosúmmo	'I (m) learned'
1f	-úmma	rosúmma	'I (f) learned'
2m	-ítto	rosítto	'you (f) learned'
2f	-ítta	rosítta	'you (m) learned'
3k	-í	rosí	'he learned'
3t	-tú	rossú	'she/they learned'
1p	-númmo	rossúmmo	'we learned'
2p	-tiní	rossiní	'you (p) learned'

The third person plural (3p) is not needed in Sidaamu Afo, because it is always expressed with the form for the third person of nouns in the t-class (3t). For a discussion about this matter, see Yri (2007:69).

In this discussion, I do not get into the details of the morphophonology of the verbal inflection that are explained extensively in Yri (2007;1990). Here I only emphasize that we have two changes, a progressive assimilation and a metathesis, that can be seen in both the paradigms depicted above and below. A **progressive assimilation** occurs in two situations: 1) in the forms where the last consonant in the stem is an obstruent or a glottal (C_1) and the suffix begins with the consonant /t/ (C_2), or 2) when the last consonant in the stem is a liquid or a nasal (C_1) and the suffix begins with the consonant /n/ (C_2). In both cases we will have the following situation: $C_1C_2 \rightarrow C_2C_2$. A **metathesis** occurs when the last consonant in the stem is an obstruent (C_1) and the suffix begins with the consonant /n/ (C_2). In this situation we will have $C_1C_2 \rightarrow C_2C_1$.

Table 5 Paradigm of Past imperfective (Palpf)

Person	Suffixes	Examples	Translation
1m	-óómmo	rosóómmo	'I (m) have learned'
1f	-óómma	rosóómma	'I (f) have learned'
2m	-óótto	rosóótto	'you (f) have learned'
2f	-óótta	rosóótta	'you (f) have learned'
3k	-inó	rosinó	'he has learned'
3t	-tinó	rossinó	'she has/they have learned'
1p	-nóómmo	ronsóómmo	'we have learned'
2p	-tinóónni	rossinóónni	'you (p) have learned'

In the morphological analysis of the examples in Chapter 5, the morphs are shown in their form after the phonological modifications described above. For example, the periphrastic verb *got't'e no* (sleep.Ser3t exist.Ipf3) 'she is sleeping' is segmented as *got'-t'e* (sleep-Ser3t), where the suffix for the serial conjugation in 3t is actually *-te* (Yri, 2007:77).

The verb is inflected in person and number, and for the singular forms 1 and 2, also in gender masculine (1m; 2m) and feminine (1f; 2f). As for the third form in the singular, the neutral notation k and t will be adopted (3k; 3t), according to the agreement between the noun, which is the subject of the clause, and the verb: the class membership of the noun is also signalled in the verb inflection. As an example confront *manco$_k$ rosinó* 'the man has learned' versus *manco$_t$ rossinó* 'the woman has learned', where the verb *rosa* 'to learn' is inflected in the 3k person and in the 3t person respectively.

A note about the Progressive participle (PrP) is here in place, since it is used extensively in the corpus. It is an infinite verb form that is always followed by another suffix, the oblique case ending *-nni* or the suffix that indicate a change in the subject *-nna*, what Yri (2007:79) calls a NS (new subject) suffix. In my data, it recurs only with the suffix *-nni*, and combined with the present imperfective form of the verb *heeɗa* 'to be' to form the finite verb form Continuous present. A typical example is *mool-ta-nni no* (dry-PrP3t-OBL(at) exixt.Ipf3) 'it is drying'. Along with this form, a reduced form is also attested in the corpus: *mool-ta-i no* (dry-PrP3t-OBL(at) exixt.Ipf3) 'it is drying'.

4.4.1 The Copula *–ho* or *–te* and the Copula *–Vti*, and some Observations about the Predicative (PIV)

The copula is defined as a finite form of the verb, because it can, together with a nominal or an adjectival predicative, stand as a complete sentence by itself (Yri, 2007:65). Identificational sentences such as **It is an N**, where N stands for an object,

a person or an entity that is expressed by a noun, can be expressed in Sidaamu Afo by adding to the noun that is the PIV the copula suffix *-ho* or *-te* that correspond to the nominal class of the above-mentioned noun. When the PIV is modified e.g. by an attribute or a possessive suffix, the copula suffix is common to both the nominal classes, that is *-Vti*, where the V means that the last vowel of the PIV is lengthened. (Yri 2007:94-98). In other words, we have a distinction between the copula used together with an unmodified PIV, and the copula with a modified PIV. In the data it will mostly be a nominal PIV, but a few examples of adjectival PIV are also present in the corpus, like for example *danca-ho* (good.acc/PIV-COP.k) 'he is good'.

In Sidaamu Afo there are two copulas that are used when the PIV is **unmodified**: *-ho* and *-te*. The choice between the two copulas depends on the nominal class of the PIV (or the noun that is the subject of the clause when the PIV is an adjective). Nouns belonging to the k-class require the copula *-ho* and nouns belonging to the t-class require the copula *-te*: confront *manc-o-ho* (man-acc-COP.k) 'there is a man' and *manc-o-te* (woman-acc-COP.t) 'there is a woman', respectively from $manco_k$ 'man' and $manco_t$ 'woman'.

When the PIV is **modified** by an attribute or a possessive suffix, the copula used in Sidaamo is *-Vti*, where V stands for the lengthening of the final vowel of the PIV to which the copula is attached. This copula is common to both the nominal classes. (Yri, 2007:94-98; Kawachi, 2007:84): confront *danca manc-o-oti* (good.acc man-acc-COP.k) 'there is a good man' and *danca manc-o-oti* (good.acc woman-acc-COP.t) 'there is a good woman', respectively from $manco_k$ 'man' and $manco_t$ 'woman'.

Yri does not explicitly say in which case the noun will be used as PIV, but it is easy to infer from the examples about identificational sentences that are used in his grammar that the noun to which the copula suffix is attached is in the accusative. Yri (2007:27) report the following example:

tóóp'i-u (k) góbb-a-te (Ethiopia-nom.U country-acc-COP.t) 'Ethiopia is a country'

As we have seen in Section 4.3.1.3, there is no segmental difference between the nominative and the accusative in nouns belonging to the t-class: the final vowel of the noun belonging to the t-class remains invariable through the paradigm. It is in the k-class that there is the vowel shift from the citation vowel -e(e), -a(a) or -o(o) in the accusative to -u or -i in the nominative. This alternation between vowels in the accusative and nominative in the k-class makes it possible for Yri to claim that it is the accusative the case in which the noun that is used as a PIV is inflected.

4.5 Some Comments on Word Order

In Sidaamu Afo the basic word order is SOV. The nucleus of a nominal phrase may be any nominal. One or more modifiers may accompany the nucleus. Most modifiers precede the nucleus, as we saw in examples in Section 4.3.1.3. The modifiers of a nominal may be adjectives, demonstratives, numerals, nouns (in the genitive or in the same case as the nucleus), and nominalized sentences, which correspond to relative clauses in English. Whenever a clause is used attributively, and it is the only attribute to the nucleus, it precedes the nucleus. No markers are needed on the attributive clause (Yri, 2007:118). Postpositions are prototypical nouns (Yri, 2007:43).

5. The Findings

This chapter is the core of the thesis. It shows the findings that are deduced from tracking the pitch of the sentences in the corpus and from comparing the pitch curves on the spectrograms. The three basic cases nominative, genitive and accusative are examined in Section 5.1, 5.2 and 5.3 respectively. Some hypotheses that can be formulated from the findings in this chapter will be discussed in Chapter 6.

5.1 Nominative

The aim of this section is to take into account the results of the analysis of nouns in the nominative. I am going to compare sentences belonging to both nominal classes, k-class and t-class, first inflected in the unmodified nominative and then inflected in the modified nominative. As we shall see, I formulate a working hypothesis about a possible difference in the tonal behaviour between disyllabic and trisyllabic nouns. Unfortunately it is not possible, based on the current data, to attain a definitive claim about trisyllabic nouns because of the absence of trisyllabic nouns belonging to the k-class in my list. The difference between disyllabic and trisyllabic nouns appeared to be more salient than I first assumed when I chose the nouns that I was going to examine.

5.1.1 Analysis of Nouns in the Unmodified Nominative

In the next two sections, examples of disyllabic and trisyllabic nouns are given. Section 5.1.1.1 presents two nouns: in examples (1)-(3) the noun *mine*$_{k}$ 'house', and in examples (4)-(6) the noun *manco*$_{t}$ 'woman'. Both nominal classes are thus represented. Section 5.1.1.2 presents a noun belonging to the t-class *ʔuddano*$_{t}$ 'clothes' in examples (7)-(9). Conclusions drawn from these two sections are summarized in Section 5.1.1.3.

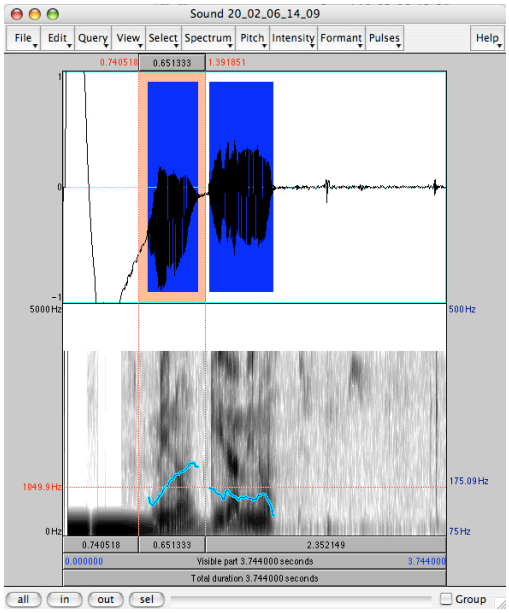
5.1.1.1 Disyllabic nouns in the unmodified nominative

In examples (1)-(3), I am going to compare three sentences, one for each consultant. In these examples we shall consider the same subject in clauses with the unmodified nominative and the same intransitive verb, *mine*$_{k}$ 'house' and *giirama* 'burn' respectively: the environment in which the noun appears is thus the same. The three examples will serve two aims: 1) to be sure that the tonal pattern of the inflected noun remains the same regardless of the consultant; and 2) to show which tonal pattern a noun belonging to the k-class has in the unmodified nominative. The tonal pattern of the noun is marked in all following examples according to the curve in the spectrogram.

In examples (1), (2), and (3) we have the disyllabic k-class noun *mine*$_{k}$ 'house' in three sentences, one from each consultant:

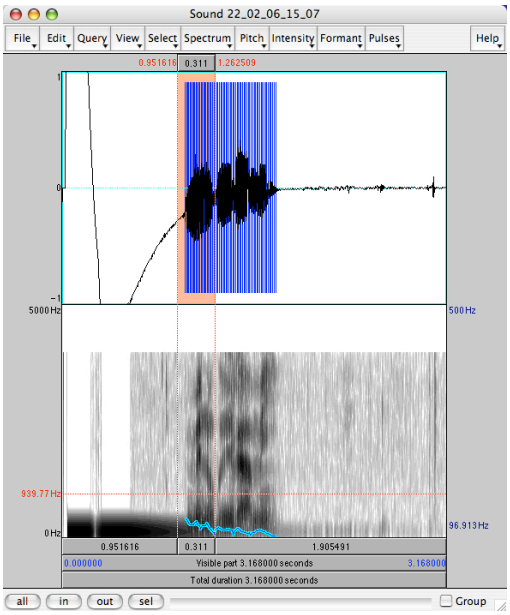
(1) mĭn-û giir-am-ino M-20.02-14:09
house-nom.U burn-PAS-PaIpf3k
'a house is burned'

Spectrogram 1 M-20.02-14:09 (minu giiramino)



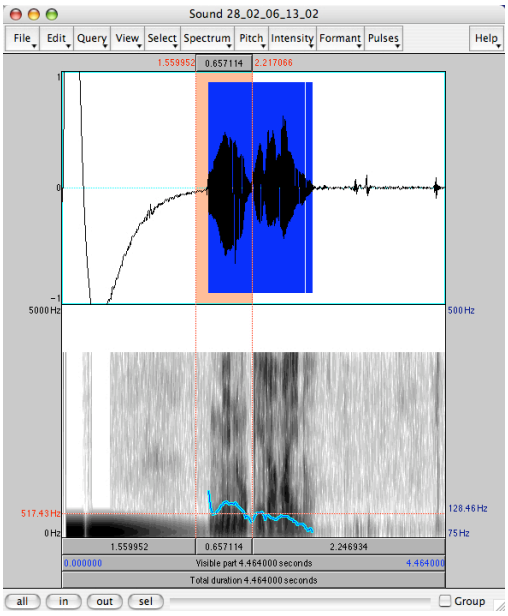
(2) mĭn-û giir-am-i T-22.02-15:07
house-nom.U burn-PAS-Pf3k
'a house burned'

Spectrogram 2 T-22.02-15:07 (minu giirami)



(3) mĭn-û giir-am-a-i no B-28.02-13:02
house-nom.U burn-PAS-PrP3t-OBL(at) exist.Ipf3
'a house is burning'

Spectrogram 3 B-28.02-13:02 (minu giiramai no)



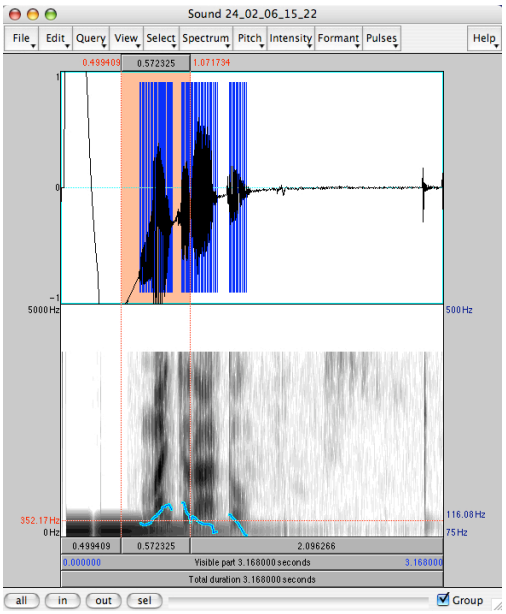
As seen from examples (1)-(3), a disyllabic k-class noun, in this case *mine*$_{k}$ 'house', displays a recursive pattern when inflected in the unmodified nominative. The pitch is rising on the penultimate syllable and falling on the last syllable.

The next noun that is examined is a disyllabic noun belonging to the t-class, *manco*$_t$ ‘woman’, shown in examples (4)-(6). Before we get to these examples, it is worth noticing that there is a main difference between the two sets of examples (1)-(3) and (4)-(6). In the first set (1)-(3), I chose sentences with a subject and an intransitive verb. The subject and the verb are the same in the three sentences, but the verb is inflected in three different tenses: past imperfective (PaIpf) in example (1), past perfective (Pf) in example (2) and imperfective (Ipf) in example (3). On the other hand, the examples (4)-(6) are chosen so that there is a difference in the number of arguments: in example (4) we have only the subject, in example (5) the direct object is included, and in example (6) both the direct object and an oblique case of location are included in addition to the subject. Common for the two sets is the fact that the subject of the sentence is a noun in the unmodified nominative, and it is the same noun in the three examples of the set. The aim with the second set of examples was to compare different environments where the analyzed noun could appear, and see if there is a suprasegmental difference between those environments. As we shall see from the analysis of examples (4)-(6), the tonal pattern of a disyllabic noun in the unmodified nominative is independent of the environment in which the noun appears.

As demonstrated in examples (1)-(3), a disyllabic noun belonging to the k-class has a rising tone on the penultimate syllable and a falling tone on the last syllable when it is inflected in the unmodified nominative. From examples (4)-(6) we can see that also a disyllabic noun belonging to the t-class, which is inflected in the unmodified nominative displays the same tonal pattern of a noun belonging to the k-class when inflected in the same case, namely a rising tone on the penultimate syllable and a falling tone on the last syllable:

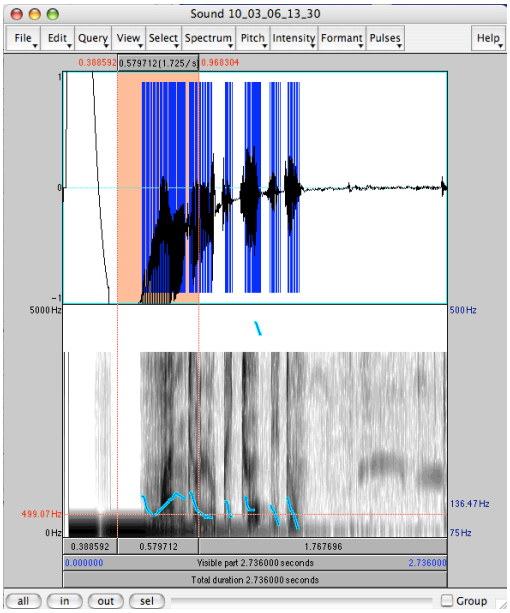
(4) măn**c-ô** raar-tu T-24.02-15:22
woman-nom.U cry-Pf3t
‘a woman cried’

Spectrogram 4 T-24.02-15:22 (manco raartu)



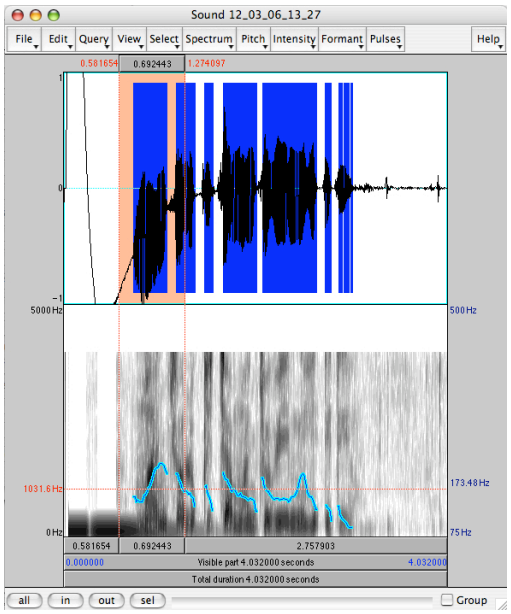
(5) măncô lukk-icc-o hiɗ-ɗ-i-tu B-10.03-13:30
woman-nom.U chicken-SGT-acc buy-AB-EpV-Pf3t
‘a/the woman bought a chicken (for herself)’

Spectrogram 5 B-10.03-13:30 (manco lukkicco hiɗɗitu)



(6) măncô lukk-icc-a manc-u-bii-nni hiɗ-ɗ-i-tio M-12.03-13:27
woman-nom.U chicken-SGT-acc man-gen.U-OBL(place-from) buy-AB-EpV-PaIpf3t
‘a/the woman has bought a chicken from a/the man’

Spectrogram 6 M-12.03-13:27 (manco lukkicca mancubiinni hiḍḍitio)



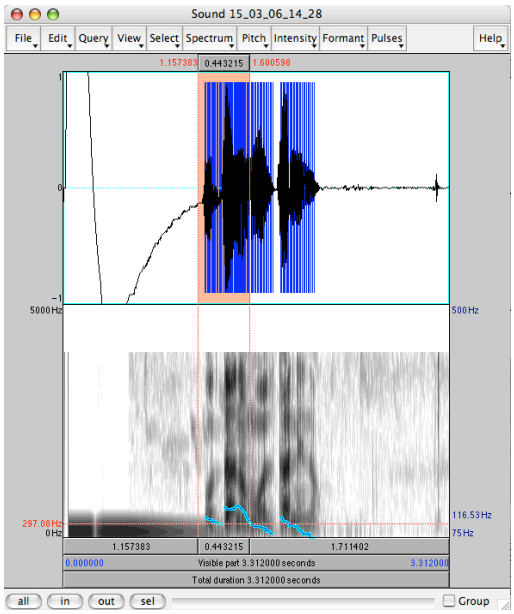
As we just saw from the examples (1)-(6), nouns that are disyllabic, regardless of which nominal class they belong to, show the same tonal pattern when inflected in the unmodified nominative, namely a rising tone on the penultimate syllable and a falling tone on the last syllable. As a working hypothesis, we can assume that this is the case both for disyllabic and trisyllabic nouns belonging to both classes. In order to investigate if this hypothesis is correct, the next step will be to take into account trisyllabic nouns.

5.1.1.2 Trisyllabic nouns in the unmodified nominative

In the following I show a t-class trisyllabic noun, *ʔuddano*$_{t}$ ‘clothes’, which will be analyzed in three examples, (7), (8), and (9):

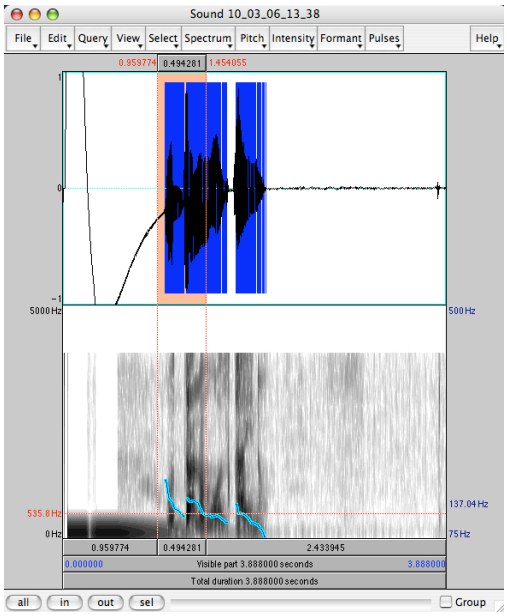
(7) ʔūddán-ô mool-ta-nni no T-15.03-14:28
suit-nom.U dry-PrP3t-OBL(at) exist.Ipf3
‘the suit is drying’

Spectrogram 7 T-15.03-14:28 (ʔuddano mooltanni no)



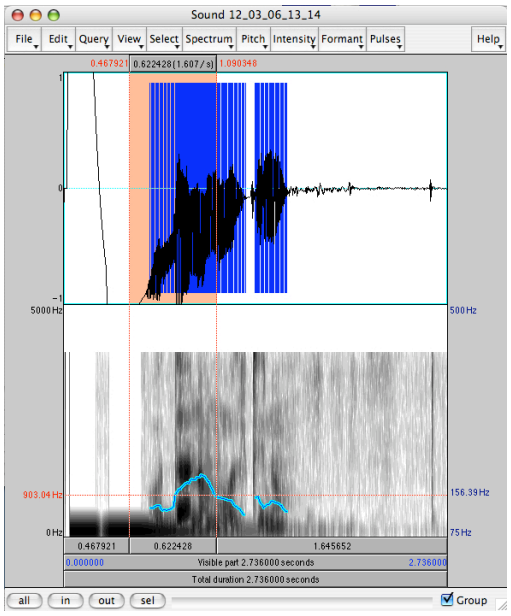
(8) ʔūddán-ô mool-ta-i no B-10.03-13:38
suit-nom.U dry-PrP3t-OBL(at) exist.Ipf3
'the suit is drying'

Spectrogram 8 B-10.03-13:38 (ʔuddano mooltai no)



(9) ʔūddán-ô mool-tino M-12.03-13:14
suit-nom.U dry-PaIpf3k
'the suit has dried'

Spectrogram 9 M-12.03-13:14 (ʔuddano mooltino)



The last three examples, (7), (8) and (9), show a pattern that is recurrent when it comes to trisyllabic nouns belonging to the t-class. The first syllable has a flat low tone, the penultimate a high tone, and the last syllable has a high falling tone.

5.1.1.3 Conclusions about the unmodified nominative

The findings in examples (1)-(9) confirm the statement in the working hypothesis of this paragraph: Sentences with a noun in the unmodified nominative display a recurrent tonal pattern. Common for disyllabic and trisyllabic nouns is a falling tone on the last syllable. While disyllabic nouns have a rising tone on the penultimate syllable and a falling one on the last, trisyllabic nouns have a flat low tone on the first syllable, a high tone on the penultimate syllable, and a high falling tone on the last syllable. An overview is depicted in Table 6:

Table 6 Unmodified nominative

Noun	Class	nom.U	Number of syllables	Examples
mine	k	mĭnû	disyllabic	(1), (2), (3)
manco	t	măncô	disyllabic	(4), (5), (6)
ʔuddano	t	ʔūddánô	trisyllabic	(7), (8), (9)

On the basis of the current data, an analysis of the trisyllabic nouns belonging to the k-class cannot be presented as for present. This represents an interesting topic for further research.

Examples in the following will not feature the same sentence as produced by each consultant, as I did in examples (1)-(3) and (7)-(9), because it would be redundant. It is important that the three consultants have a similar tonal pattern in the same kind of sentence, for the comparison of sentences from different consultants in the rest of the thesis.

5.1.2 Analysis of Nouns in the Modified Nominative

In this section, clauses with NPs in which the nominative is modified by an attribute will be examined. I am going to collect a sample of examples from both nominal classes. As for the k-class, I shall analyze the disyllabic noun *mine*$_{k}$ ‘house’. For the t-class, I am going to analyze three disyllabic nouns *ʔama*$_{t}$ ‘mother’, *lekka*$_{t}$ ‘foot/feet’, and *manco*$_{t}$ ‘woman’, and the trisyllabic noun *ʔuddano*$_{t}$ ‘clothes’. As we shall see, we take into account so many disyllabic nouns belonging to the t-class because the analysis of my data invites us to posit three different working hypotheses, that I shall refer to as H_A, H_B and H_C; the details about these hypotheses in the next section.

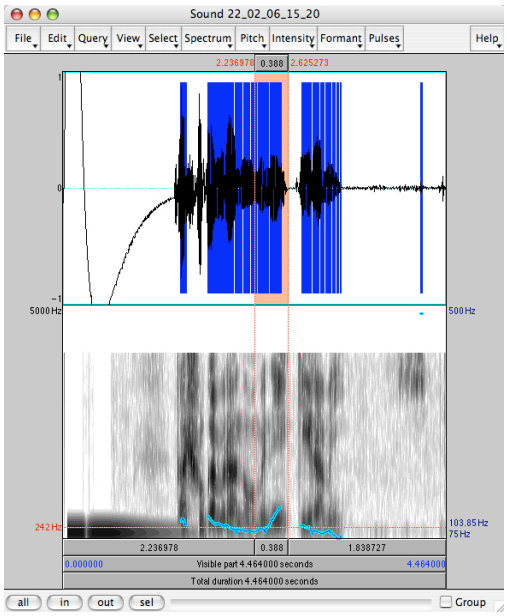
5.1.2.1 *Disyllabic nouns in the modified nominative*

First I examine a word in the k-class. It is the disyllabic noun, *mine*$_{k}$ ‘house’. In examples (1)-(3) we saw the tonal pattern for such a word in the unmodified nominative, that is a rising pitch on the penultimate syllable and a falling tone on the last syllable (i.e. Table 6). In example (10), we have a sentence where the target noun *mine*$_{k}$ ‘house’ is in the nominative modified by a relative clause:

(10) t’aʃʃ-u gam-i-ra no mīn-í giir-am-i T-22.02-15:20
river-gen.U side-gen.M-OBL(at) exist.Ipf3 house-nom.M burn-PAS-Pf3k
‘the house that is near the river burned’

As we can see from Spectrogram 10 below, the noun *mine*$_{k}$ ‘house’ in the modified nominative has a tonal pattern consisting in a flat low tone on the first syllable and then a rising tone on the last syllable. It is worth noticing the pause in the speech of the consultant right after the head of the nominal phrase which is the subject in the clause: *t’aʃʃu gamira no mini || giirami*. In the spectrogram it is the white vertical stripe right after the highlighted noun *mini* and before the verb *giirami*. This is the pause Teferra discusses in his dissertation (Teferra, 2000:16).

Spectrogram 10 T-22.02-15:20 (t’aʃʃu gamira no mini giirami)

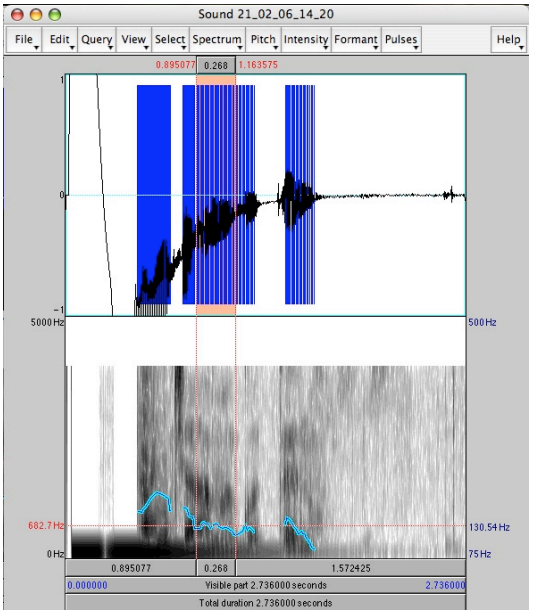


In the next couple of examples, we analyze a disyllabic noun belonging to the t-class, *ʔama*$_t$ ‘mother’. The noun is inflected in the modified nominative. Comparing examples (11) and (12) suprasegmentally is really interesting as one of the consultants pronounces the exactly same sentence with two different tonal patterns. I have several pairs of examples where the same sentence is pronounced either twice one after the other from the same consultant, or by two different consultants, but examples (11) and (12) seem to be the only two with different pronunciations.

(11) danca ʔām-ā got’-t’e no M-21.02-14:20
good.nom mother-nom.M sleep-Ser3t exist.Ipf3
‘the good mother is sleeping’

As we can see from Spectrogram 11 below, the target word *ʔama*$_t$ ‘mother’ is pronounced with a flat low tone on both syllables.

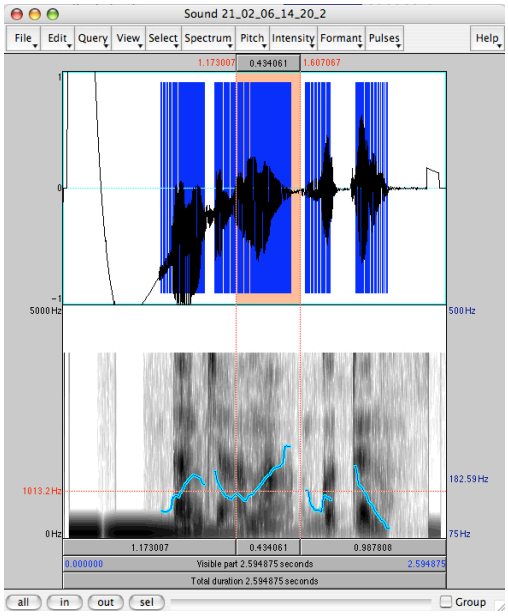
Spectrogram 11 M-21.02-14:20 (danca ʔama got’t’e no)



(12) danca ʔām-ă got’-t’e no M-21.02-14:20.1
good.nom mother-nom.M sleep-Ser3t exist.Ipf3
‘the good mother is sleeping’

In Spectrogram 12 below, we can see that the target word *ʔama*$_t$ ‘mother’ is pronounced with a flat tone on the first syllable and a rising tone on the last syllable.

Spectrogram 12 M-21.02-14:20.1 (danca ʔama got't'e no)



The difference between examples (11) and (12) is quite remarkable, yet difficult to explain on the basis of my data. When interrogated about a possible semantic difference between the two sentences, the consultant answered that there was none. In addition, I asked the other two consultants to listen to the recordings because I wanted to be sure that the two sentences had the same meaning. They did not listen to the two sentences together. I made them listen to a sentence in one session and to the second sentence in another session, because I did not want their interpretation of a sentence to be influenced by the previous one. They all translated the two sentences in the same way.

It is tempting to conclude that the suprasegmental pattern adds no grammatical meaning to the clause. If a consultant can pronounce a sentence with the subject in the modified nominative both with a low tone and a rising tone on the last syllable, this should mean that the tone we are analyzing does not convey a grammatical meaning, otherwise we would have had two different translations of examples (11) and (12). However, I am hesitant to draw to this conclusion on the basis of only one pair of clauses. If I could show several pairs with the same tonal variation and the same meaning, I would conclude that the observed variation does not convey a

grammatical meaning, but I do not think that it is enough to have only one recurrence of this variation in a corpus of 785 sentences to come to this conclusion. I consider this matter as an interesting and important topic for further research.

It remains to decide which one of the two tonal patterns, if any, should be taken into account in the generalization about t-class nouns in the modified nominative. On the basis of examples (11) and (12) it is not possible to conclude that disyllabic t-class nouns when inflected in the modified nominative have a low tone on both syllables (referred to as H_A) or a low tone on the first syllable and a rising tone on the last syllable (H_B).

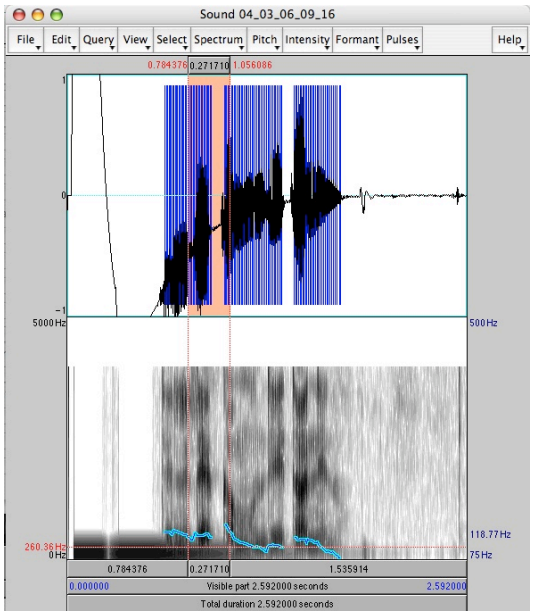
To test these two hypotheses, we need to check the findings above against several examples. The next example is the disyllabic t-class noun *lekka*$_t$ 'foot/feet':

(13) tin-i	lèkk-â	mundii-ta-nni	no	T-04.03-09:16
this.t-nom	foot-nom.M	bleed-PrP3t-OBL(at)	exist.Ipf3	

'this foot is bleeding'

Spectrogram 13 below shows that the noun *lekka*$_t$ 'foot/feet', when inflected in the modified nominative has a low tone on the first syllable and a falling tone on the last syllable. In this example, the noun *lekka*$_t$ 'foot/feet' is modified by the demonstrative pronoun *ténne*$_t$ 'this', inflected in its nominal form *tíni*.

Spectrogram 13 T-04.03-09:16 (tini lekka mundiitanni no)

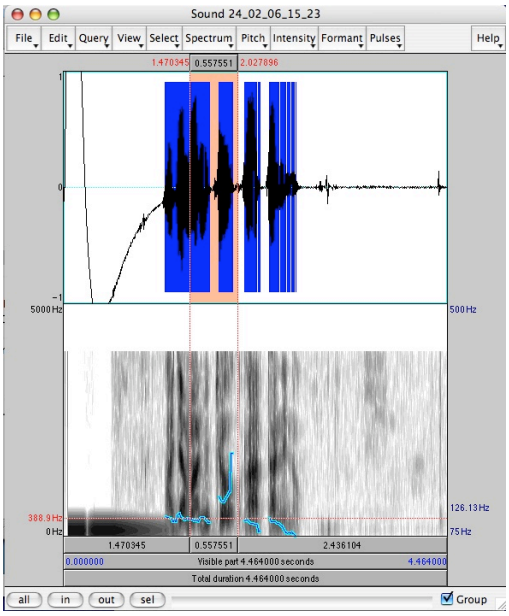


It can not be seen from example (13) which of the two different proposed tonal patterns should be used as the generalization of a disyllabic t-class noun in the modified nominative, either the one with a low tone on both syllables (H_A) or the one with a rising tone on the last syllable (H_B). The last example shows a new tonal pattern, namely a low tone on the first syllable and a falling tone on the last syllable. On the basis of examples (12) and (13), we could say that the last syllable presents a high tone, and that the rising/falling intonation pattern does not add further grammatically relevant information. As long as the speaker produces the tone on the last syllable as a high tone, the hearer will interpret the noun as a modified nominative (H_C). Let us test this last hypothesis with a new example. In example (14), we shall examine a third disyllabic noun belonging to the t-class, *manco*$_t$ 'woman', inflected in the nominative modified by an adjective:

(14) aja mānc-ŏ raar-ta-nni no T-24.02-15:23
young.nom woman-nom.M cry-PrP3t-OBL(at) exist.Ipf3
'a young woman is crying'

Example (14) confirms Hypothesis C about a high tone on the last syllable for t-class nouns in the modified nominative. The tone is a rising tone, as we can see in Spectrogram 14:

Spectrogram 14 T-24.02-15:23 (aja manco raartanni no)



Since examples (12)-(14) confirm H_C that a disyllabic noun belonging to the t-class has a high tone on the last syllable when inflected in the modified nominative, the above described tonal pattern will be used as a generalization in the following. A discussion on the low tone displayed in example (11) is left for further research.

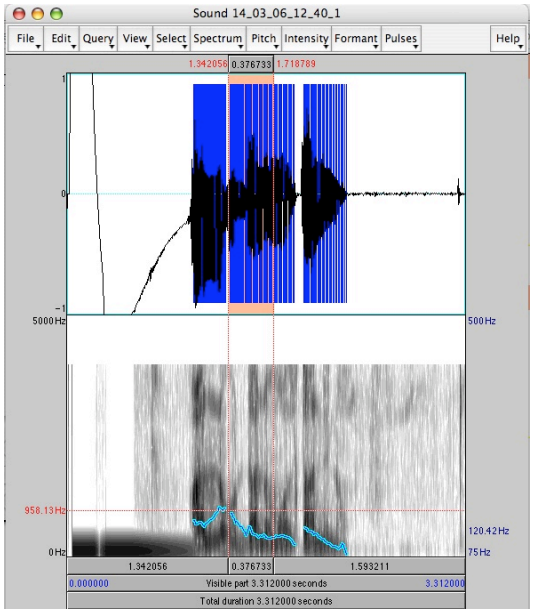
5.1.2.2 Trisyllabic nouns in the modified nominative

The next noun we examine is *ʔuddano*$_k$ 'clothes'. It is a trisyllabic noun belonging to the t-class. Examples (7)-(9) showed three clauses with this noun inflected in the unmodified nominative. In example (15), we examine the target noun *ʔuddano*$_t$ 'clothes' in the nominative modified by the noun *ʔanna*$_k$ 'father' in the genitive form *ʔannu*:

(15) ʔann-u ʔûddàn-ò mool-ta-nni no B-14.03-12:40.1
father-gen.U suit-nom.M dry-PrP3t-OBL(at) exist.Ipf3
'the suit of the father is drying'

In Spectrogram 15 we can see that the noun *ʔuddano*$_t$ 'clothes' when inflected in the modified nominative, has a falling tone on the first syllable, and then a low tone, slightly falling, on the last two syllables.

Spectrogram 15 B-14.03-12:40.1 (ʔannu ʔuddano mooltanni no)



5.1.2.3 Conclusions about the modified nominative

The findings in examples (10)-(14) gave us the material to discuss the tonal pattern on disyllabic nouns inflected in the modified nominative. As we can see from Table 7 below, it is not possible to infer a general tonal pattern from the examples without generalizing some common features. In Section 5.1.2.1 three working hypotheses were discussed. H_C is claimed to generalize the recurring tonal pattern: the modified nominative in disyllabic nouns presents a high tone on the last syllable. H_C also states also that the rising/falling intonation patterns shown in the examples do not add further grammatically relevant information. A different explanation could be that in Sidaamu Afo there are several t-subclasses, that we can call for example t_1-class, t_2-class, and so on. These classes may not differ on the segmental level but may diverge on the suprasegmental level. Since the corpus is restricted to a few nouns belonging to this nominal class, it may not show enough variation to permit to see several independent patterns. This hypothesis should not be rejected without further research, but the fact that we have two different tonal patterns on the same sentence (i.e. examples (11) and (12)) still poses a problem that needs to be accounted for.

As for trisyllabic nouns, example (15) shows that t-class nouns in the unmodified nominative display a falling tone on the first syllable, and low tone on the other two. No common features can account for both disyllabic and trisyllabic nouns.

Table 7 Modified nominative

Noun	Class	nom.M	Number of syllables	Examples
mine	k	mīní	disyllabic	(10)
ʔama	t	ʔāmă (ʔāmā)	disyllabic	(11), (12)
lekka	t	lèkkâ	disyllabic	(13)
manco	t	māncŏ	disyllabic	(14)
ʔuddano	t	ʔûddànò	trisyllabic	(15)

5.2 Genitive

This section gives an account of the results in the analysis of nouns in the genitive. As we already have done with the nominative, we will compare sentences belonging to k-class and t-class, first in the unmodified form of the genitive and afterwards in the modified form of the genitive. As we shall see the discussion of the results about the genitive will be less problematic than the discussion of the results about the nominative.

5.2.2 Analysis of Nouns in the Unmodified Genitive

In the next two sections, examples of disyllabic and trisyllabic nouns are given. Both the nominal classes are investigated.

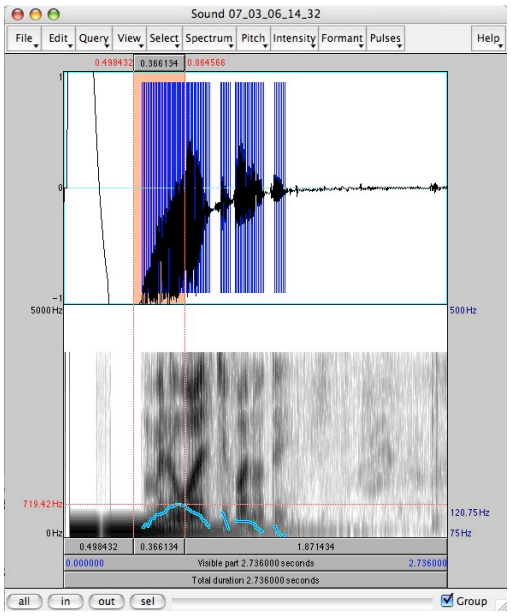
5.2.2.1 *Disyllabic nouns in the unmodified genitive*

In this section two disyllabic nouns from each nominal class are given. For the k-class, the nouns *mine*$_k$ ‘house’ and *manna*$_k$ ‘people’; for the t-class, the nouns *lekka*$_t$ ‘foot/feet’ and *ʔama*$_t$ ‘mother’.

Example (16) shows the k-class noun *mine*$_k$ ‘house’ inflected in the unmodified genitive:

(16) mĭn-ú waalc-i fan-o-te T-07.03-14:32
house-gen.U door-nom.M opening-acc-COP.t
‘the door of the house is open’

Spectrogram 16 T-07.03-14:32 (minu waalci fanote)

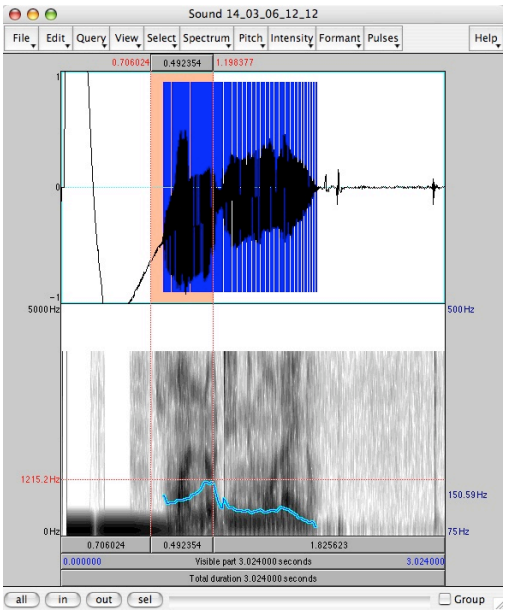


The second disyllabic noun belonging to the k-class is *manna*$_k$ ‘people’, here in the following example. Note that in this example there

(17) măn-ú ʔudiinn-i mool-a-i no B-14.03-12:12
people-gen.U clothes-nom.U dry-PrP3k-OBL(at) exist.Ipf3
‘the clothes of the people are drying’

As we can see from Spectrogram 17, the tonal pattern of the unmodified genitive in this clause is the same as the tonal pattern in example (16) above.

Spectrogram 17 B-14.03-12:12 (mannu ʔudiinni moolai no)



When it comes to nouns belonging to the t-class, we have to make an observation about the morphological analysis. As described in Table 3, when a t-class noun is inflected in the unmodified genitive, it presents the suffix *-te* on the stem that is composed by the root of the noun and the final vowel. The final vowel does not change in the paradigm of this nominal class, and it is the same throughout the paradigm, that is in the accusative, the nominative and in the genitive. The question is how we should analyze this final vowel in the morphological segmentation. For example, the unmodified genitive of the noun *lekka*$_t$ 'foot/feet' is *lekkate*. It is plausible to maintain the same segmentation that we already adopted for the nominative, that is *lekk-a-te*. What morphological interpretation should we give to the morph *-a-* in *lekkate*? Since it marks the accusative, the nominative, and the genitive, the answer is not so obvious. If we analyze the noun as *lekk-a-te* (foot-gen-gen.U) we have a redundancy in the segmentation; if we analyze it as *lekka-te* (foot-gen.U) we lose the consistency with the rest of the segmentation in the analysis of the data. Yri (2007) resolves the problem by giving to the *-a-* the same interpretation that is given to the noun the possessor refers to, as we can see from the following example cited from Yri (2007:33):

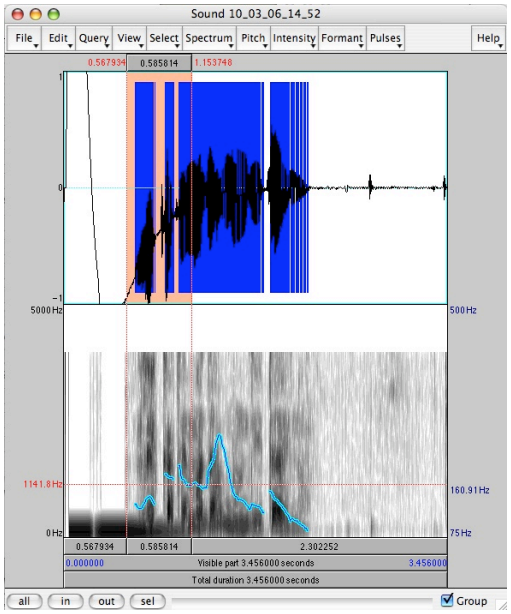
borr-o-te *sokk-a* *sok-noonni-hu* *mam-i-nni-iti*
writing-acc-gen.U message-acc send-PaIpf.US-NZ.k.nom where-gen-OBL(from)-COP
'from where it is that one has sent the message of writing(letter)?'

In the rest of the discussion about t-class nouns in the unmodified genitive, the same notation is adopted, as we can see, among others, from example (18). The t-class noun *lekka*$_t$ 'foot/feet' is inflected in the unmodified genitive:

(18) lèkk-á-tê mad-a mundii-ta-i no M-10.03-14:52
foot-nom-gen.U wound-nom.M bleed-PrP3t-OBL(at) exist.Ipf3
'this foot is bleeding'

Spectrogram 18 below shows the disyllabic noun *lekka*$_t$ 'foot/feet' inflected in the unmodified genitive and presents the tonal pattern for the noun: a low tone on the first syllable of the stem, a high tone on the last syllable of the stem and a falling tone on the suffix *-te*.

Spectrogram 18 M-10.03-14:52 (lekkate mada mundiitai no)

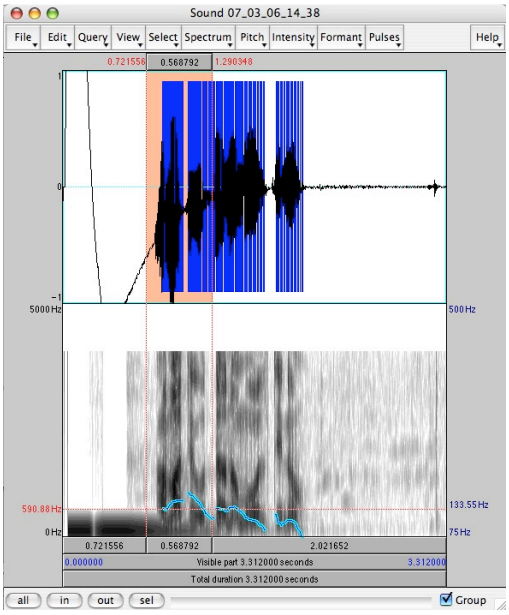


In example (19), we have another t-class noun inflected in the unmodified genitive *ʔama*$_t$ 'mother':

(19) ʔam-á-tê ʔuddan-o mool-tino T-07.03-14:38
mother-nom-gen.U suit-nom.M dry-PaIpf3k
'the suit of the mother has dried'

Spectrogram 19 does not give the pitch curve for the first syllable of the stem; therefore it is not marked in the example.

Spectrogram 19 T-07.03-14:38 (ʔamate ʔuddano mooltino)

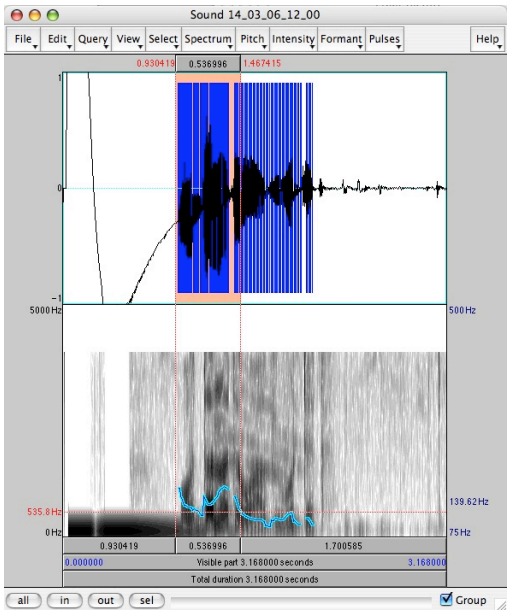


5.2.2.2 *Trisyllabic nouns in the unmodified genitive*

In this section, a trisyllabic noun belonging to the t-class, ʔ*uddano*$_t$ 'suit', is shown as inflected in the unmodified genitive. In example (20) it is inflected in the unmodified nominative:

(20) ʔūddán-ó-tê waag-i wudd-e-te B-14.03-12:00
suit-nom-gen.U price-nom.M expensive-acc-COP.t
'the price of the suit is high'

Spectrogram 20 B-14.03-12:00 (ʔuddanote waagi wuddete)



5.2.2.3 Conclusions about the unmodified genitive

As we can see from examples (16)-(17), the tonal pattern of the unmodified genitive in disyllabic nouns belonging to the k-class is clear: there is a rising tone on the penultimate syllable and a falling tone on the last one. Examples (18)-(19) give the tonal pattern for disyllabic nouns belonging to the t-class: a low tone on the first syllable of the stem, a high tone on the last syllable of the stem and a falling tone on the suffix *-te*. As Spectrogram 20 shows, the tonal pattern for trisyllabic t-class nouns in the unmodified genitive is mid tone on the first syllable of the stem, high on both the penultimate and the last syllable of the stem, and falling on the suffix *-te*. A summary is given in Table 8:

Table 8 Unmodified genitive

Noun	Class	gen.U	Number of syllables	Examples
mine	k	mĭnú	disyllabic	(16)
manna	k	măннú	disyllabic	(17)
lekka	t	lèkkátê	disyllabic	(18)
ʔama	t	ʔamátê	disyllabic	(19)
ʔuddano	t	ʔūddánótê	trisyllabic	(20)

5.2.3 Analysis of Nouns in the Modified Genitive

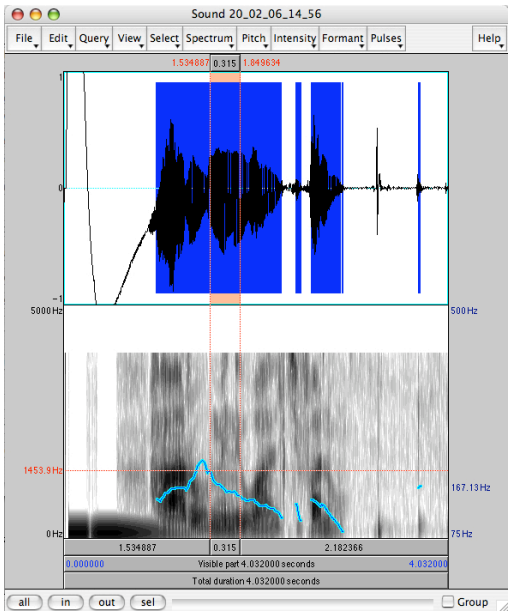
This section is dedicated to the investigation of the modified genitive. Examples from both the nominal classes, and of both disyllabic and trisyllabic nouns are given. The data in the corpus are consistent in the modified genitive; therefore only a few examples are given.

5.2.3.1 Disyllabic nouns in the modified genitive

In this section disyllabic nouns in the k-class and in the t-class are analyzed; for the k-class the noun is *mine*$_k$ ‘house’; for the t-class the nouns is *manco*$_t$ ‘woman’.

(21) haar-u mìn-ì waalc-i fan-o-te M-20.02-14:56
new-gen.U house-gen.U door-nom.M opening-acc-COP.t
‘the door of the new house is open’

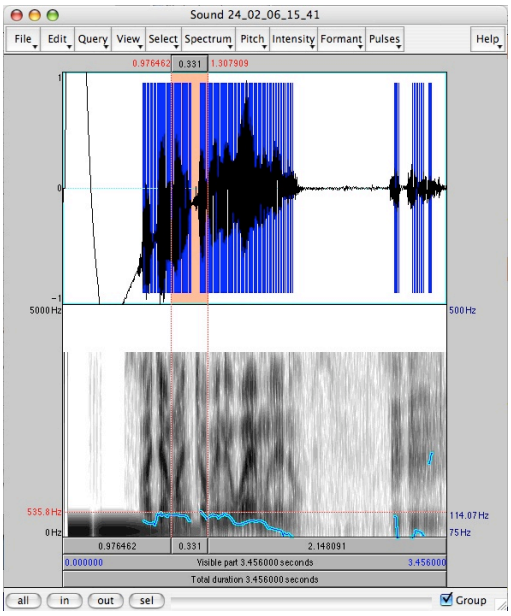
Spectrogram 21 M-20.02-14:56 (haaru mini waalci fanote)



In the next example, we have a k-class noun that is inflected irregularly. The noun *waa*$_k$ 'water' has the form *wa-i* and never the form **wa-u* both in the nominative and in the genitive; therefore it is not marked for the difference between the unmodified and the unmodified form in these cases:

(22) ʔaja mànc-ò min-i wa-i mul-e no T-24.02-15:41
young.nom woman-gen.M house-nom.M water-gen.U near-acc exist.Ipf3
'the house of the young woman is near the water'

Spectrogram 22 T-24.02-15:41 (ʔaja manco mini wai mule no)

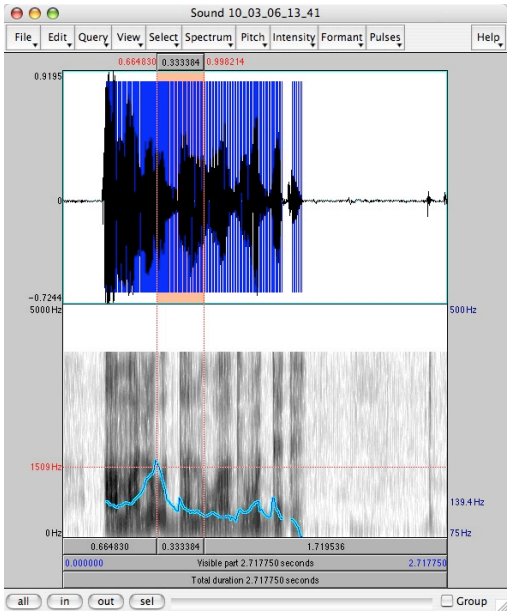


5.2.3.2 Trisyllabic nouns in the modified genitive

In Section 5.2.2.1 we discussed the morphological segmentation of t-class nouns inflected in the unmodified genitive (i.e. the cited noun was segmented in the following way: *lekk-a-te*). Here we opt for the same segmentation, but we need to reconsider the morphological interpretation of the final vowel of the noun. In the above-cited example, the morph *-a-* in *lekk-a-te* is interpreted in different ways. If *lekkate* is the attribute of a noun in the accusative, the *-a-* is interpreted as the accusative marking on the unmodified genitive *lekkate*; if *lekkate* is the attribute of a noun in the nominative, the *-a-* is interpreted as the nominative marking. As we can see from the next example, the morph *-a-* in a t-class noun inflected in the modified genitive is interpreted morphologically as the case marking of the unmodified genitive:

(23) ʔamalo ʔûddàn-ò waag-i wudd-e-te B-10.03-13:41
amalo.gen.U suit-gen.M price-nom.M expensive-acc-COP.t
'the price of Amalo's suit is high'

Spectrogram 23 B-10.03-13:41 (ʔamalo ʔuddano waagi wuddete)



5.2.3.3 Conclusions about the modified genitive

The modified genitive does not pose any special challenge, and is consistent throughout the current data. Only three examples from all the sentences with a noun in the modified genitive that are available in the corpus were chosen. The recurrent pattern is a low tone on both syllables for disyllabic nouns, and a falling tone on the first syllable and a low tone on the last two syllables in trisyllabic nouns. A summary is shown in Table 9:

Table 9 Modified genitive

Noun	Class	gen.M	Number of syllables	Examples
mine	k	mìnì	disyllabic	(21)
manco	t	màncò	disyllabic	(22)
ʔuddano	t	ʔddànò	trisyllabic	(23)

5.3 Accusative, Citation Form, and Predicative (PIV)

This section differs from the sections about the nominative and the genitive in that whereas the previous sections treated both the unmodified and the modified form of nominative and accusative, this section will only examine nouns inflected in the unmodified accusative. With the current corpus, it is unfortunately not possible to attain any conclusions about the modified form of the accusative. However, in this section attention is dedicated to the description of two different comparisons: 1) the tonal comparison between the unmodified nominative and the accusative of the noun; and 2) the tonal comparison between the unmodified accusative and the PIV. In order to achieve these aims, we will compare two different kinds of sentences in Section 5.3.1 and in Section 5.3.3. Both sections will also describe the tonal pattern for the noun in its citation form. In the discussion, whenever the term "accusative" is used, it will exclusively refer to the unmodified form of the accusative.

5.3.1 Comparing Clauses with a S and Clauses with a DO

The aim of this section is to describe the findings related to the first of the two issues above stated. Clauses are matched up in pairs: a clause with a noun in the unmodified nominative is compared with a clause with the same noun in the accusative. To facilitate the evaluation, the target noun is going to be highlighted in all the spectrograms by means of the two dotted lines described in Section 3.2.2. The contrast is completed with the analysis of the target noun in its citation form. This analysis is done both for disyllabic nouns and for trisyllabic nouns.

The morph that correspond to the last vowel in the analyzed noun is usually been morphologically interpreted as "acc" in earlier literature, but will be marked as "acc/CIT" in the following. The reason why I chose to use a special label for the citation form is that it will be necessary, in Chapter 6, to distinguish between examples where a noun is inflected in the accusative, and examples where the noun is cited by itself. In earlier literature, no attention was paid to a possible tonal variation

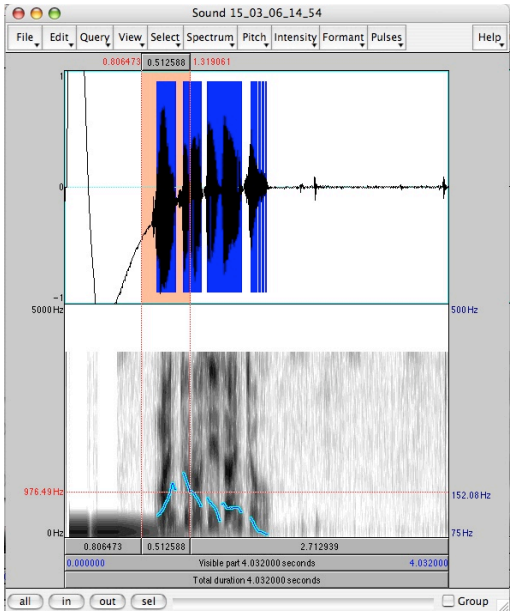
between the two items, and only the segmental structure of the nouns was investigated. Since the accusative and the citation form do not differ segmentally, such a choice was economical and coherent. Here we anticipate a notation that distinguishes between these two forms by means of different labels. This will ease the argumentation in Chapter 6.

5.3.1.1 Disyllabic nouns

In examples (24) and (25) the k-class noun *manco*$_k$ 'man' is compared, in the unmodified nominative and in the accusative respectively:

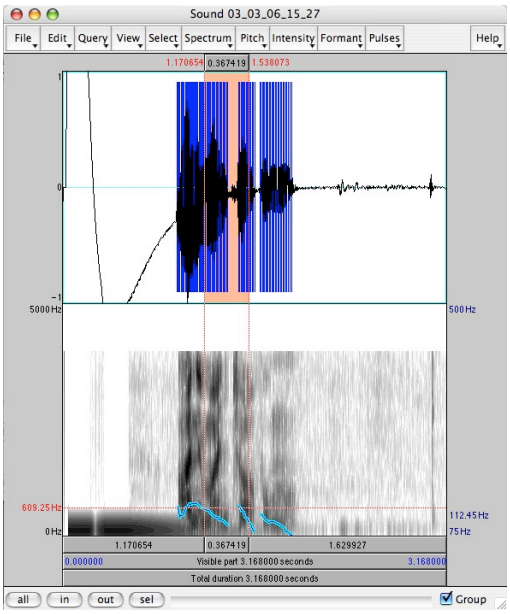
(24) măn**c**-û rosisaanco-ho T-15.03-14:54
man-nom.U teacher.COP.k
'the man is a teacher'

Spectrogram 24 T-15.03-14:54 (mancu rosisaancoho)



(25) ʔan-i mânc-ô ʔaf-ummo T-03.03-15:27
I-nom man-acc see-Pf1m
'I saw a/the man'

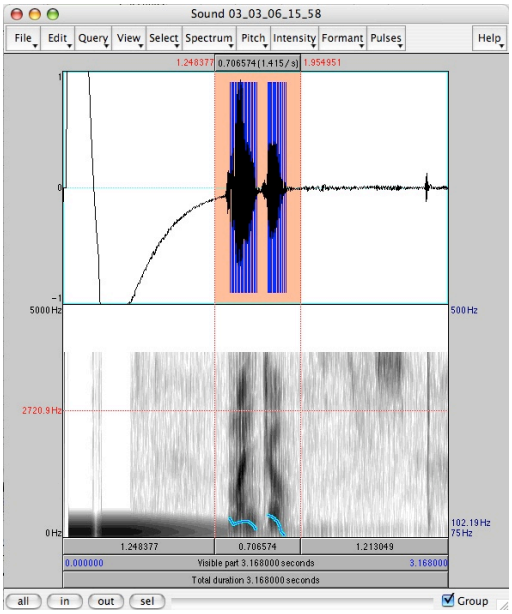
Spectrogram 25 T-03.03-15:27 (ʔani manco ʔafummo)



In the next example, the noun *manco*$_k$ ‘man’ is analyzed in its citation form:

(26) mānc-ô T-03.03-15:58
man-acc/CIT
‘a/the man’

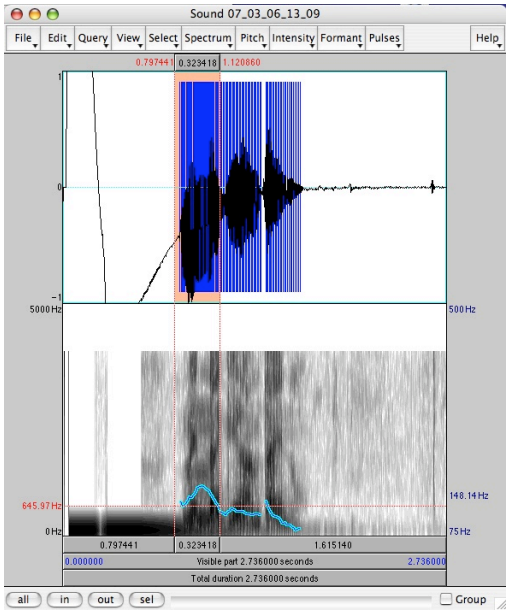
Spectrogram 26 T-03.03-15:58 (manco)



In examples (27) and (28) the t-class noun *minna*$_t$ ‘houses’ is shown inflected in the unmodified nominative and in the accusative respectively:

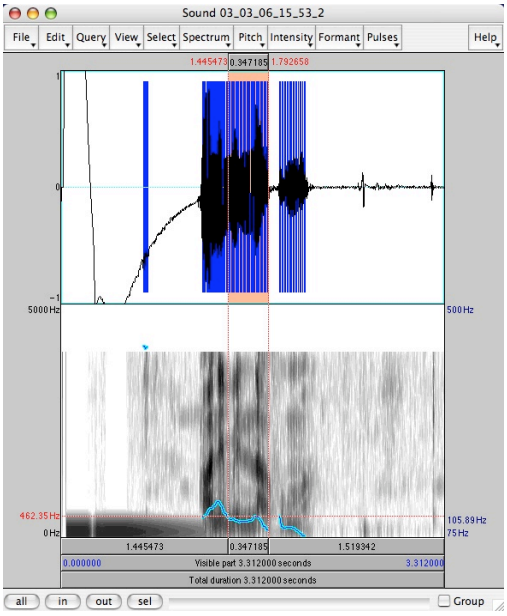
(27) mīnn-â giir-an-ta-i no B-07.03-13:09
houses-nom.U burn-PAS-PrP3t-OBL(at) exist.Ipf3
‘the houses are burning’

Spectrogram 27 B-07.03-13:09 (minna giirantai no)



(28) ʔan-i mīnn-â ʔaf-umma T-03.03-15:53.2
I-nom houses-acc see-Pf1f
‘I saw the houses’

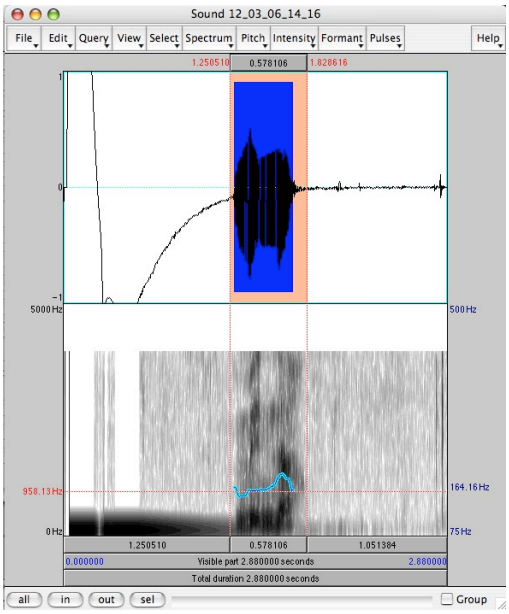
Spectrogram 28 T-03.03-15:53.2 (ʔani minna ʔafumma)



In the next example, the noun *minna*$_t$ ‘house’ is analyzed in its citation form:

(29) mīnn-â M-12.03-14:16
houses-acc/CIT
‘houses’

Spectrogram 29 M-12.03-14:16 (minna)

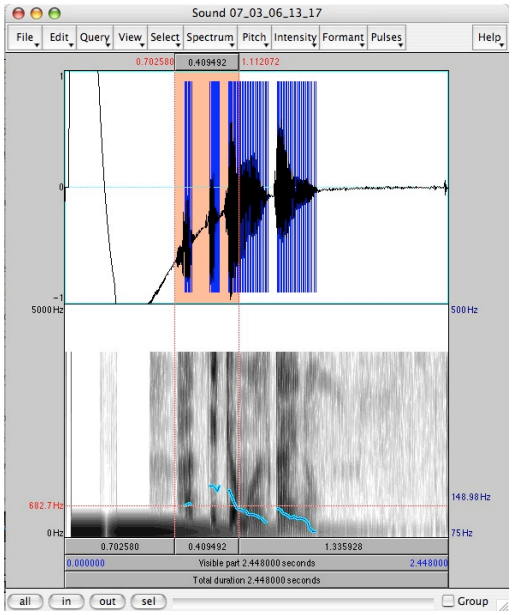


5.3.1.2 *Trisyllabic nouns*

In examples (30), (31), and (32) the same noun *hak'k'icco*$_t$ 'tree' is analyzed when inflected in the unmodified nominative, the accusative, and in its citation form respectively. As we shall see from examples (30)-(32), the tonal pattern for trisyllabic nouns is invariable in the three forms unmodified nominative, accusative and citation form: there is a mid tone on the first syllable, a high tone on the penultimate syllable and a falling tone on the last syllable.

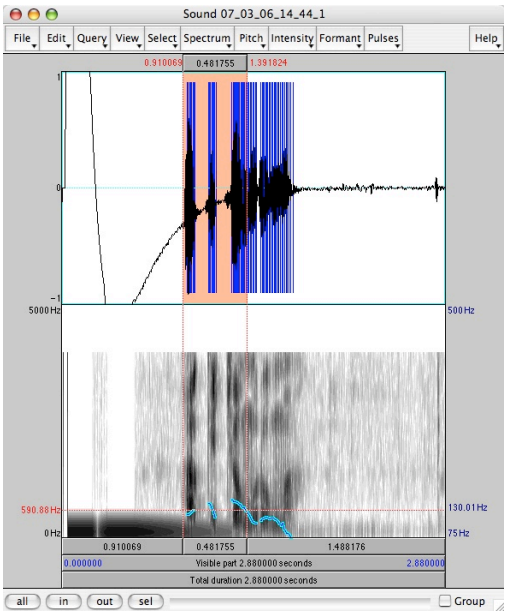
(30) hāk'k'-ícc-ô mool-ta-i no B-07.03-13:17
tree-SGT-nom.U dry-PrP3t-OBL(at) exist.Ipf3
'a/the tree is drying'

Spectrogram 30 B-07.03-13:17 (hak'k'icco mooltai no)



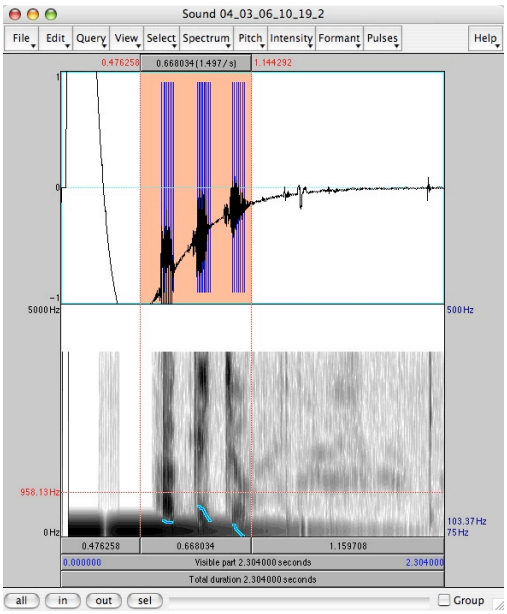
(31) hāk'k'-ícc-ô mur-umma T-07.03-14:44.1
tree-SGT-acc cut- Pf1f
'I cut a/the tree'

Spectrogram 31 T-07.03-14:44.1 (hak'k'icco murumma)



(32) hāk'k'-ícc-ô T-04.03-10:19.2
tree-SGT-acc/CIT
'a/the tree'

Spectrogram 32 T-04.03-10:19.2 (hak'k'icco)



5.3.1.3 Conclusions from the comparison of clauses with a S and clauses with a DO

There is a noticeable change in the tonal pattern of disyllabic nouns belonging to the k-class when inflected in the nominative and in the accusative. In the nominative the

first syllable has a rising tone and the second syllable has a falling tone, whereas both the syllables have a falling tone in the accusative, as the noun *manco*$_{k}$ 'man' in (24) and (25) showed us. In its citation form, the noun has a mid tone on the first syllable and a falling tone on the last syllable, as we can see from example (26). As for disyllabic nouns belonging to the t-class, the situation is different, because they maintain the same tonal behaviour in the unmodified nominative, in the accusative and in the citation form, i.e. the noun *minna*$_{t}$ 'houses' in examples (27), (28), and (29). The trisyllabic t-class noun *hak'k'icco*$_{t}$ 'tree' showed in examples (30), (31), and (32) an unvarying tonal pattern in the three situations: a mid tone on the first syllable, a high tone on the penultimate syllable and a falling tone on the last syllable. A summary is given in the table below:

Table 10 Comparison between nominative, accusative and citation form

Noun	Class	Inflected form	Case/grammatical function	Number of syllables	Examples
manco	k	măncû	nom.U	disyllabic	(24)
manco	k	mâncô	acc	disyllabic	(25)
manco	k	māncô	CIT	disyllabic	(26)
minna	t	mīnnâ	nom.U/acc/CIT	disyllabic	(27), (28), (29)
hak'k'icco	t	hāk'k'íccô	nom.U/acc/CIT	trisyllabic	(30), (31), (32)

5.3.2 Comparing Clause with a DO and Clauses with a PIV

The aim of this section is to describe the findings related to the second of the two issues stated in Section 5.3, namely the tonal comparison between the unmodified

accusative and the PIV. Theoretically, the implications linked to this comparison are highly interesting: is the PIV being inflected in a case of its own, or in the accusative? The case in which the noun is inflected when used as a PIV together with the copula suffix is in the traditional literature normally called the accusative. From a segmental point of view this is correct, i.e. the discussion in Section 4.4.1. On the other hand if there is a suprasegmental difference between the accusative and the PIV, it could be suggested that the PIV is inflected in a case of its own (i.e Chapter 6).

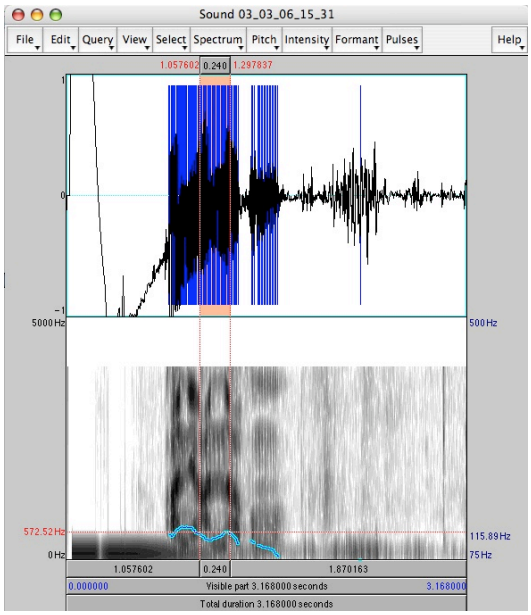
To reflect the fact that we do not yet know the outcomes of the results of the tonal analysis of the PIV, in the following the morph that marks the PIV in the predicate composed by the PIV and the copula will be morphologically interpreted as "acc/PIV" and not as "acc" as it has been done in earlier literature (i.e. the discussion in Section 4.4.1). The reason is the same that the one that was given about the citation form in Section 5.3.1: it will ease the discussion in Chapter 6.

5.3.2.1 Disyllabic nouns

This section starts showing the noun ʔ*anna*$_k$ 'father' inflected in the accusative in example (33), and as PIV in example (34):

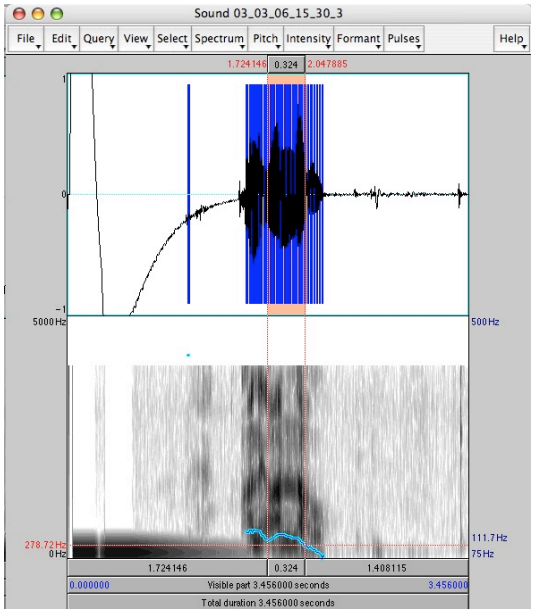
(33) ʔan-i ʔànn-ă ʔaf-ummo T-03.03-15:31
I-nom father-acc see- Pf1m
'I saw a/the father'

Spectrogram 33 T-03.03-15:31 (ʔani ʔanna ʔafummo)



(34) ʔan-i ʔánn-â-ho T-03.03-15:30.3
I-nom father-acc/PIV-COP.k
'I am a father'

Spectrogram 34 T-03.03-15:30.3 (ʔani ʔannaho)



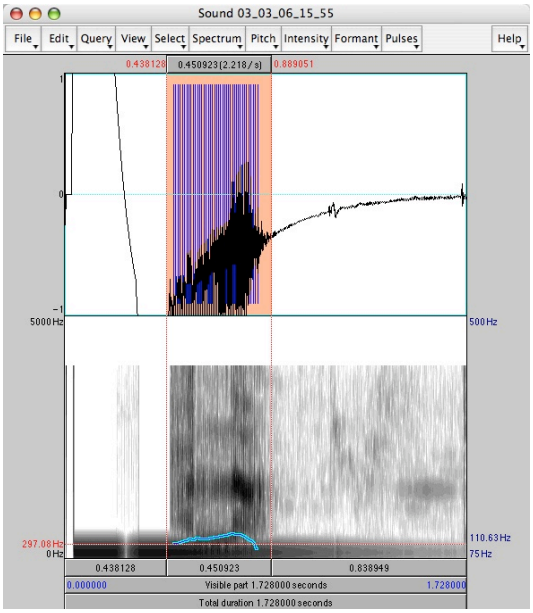
There is a difference in the tonal pattern of the analyzed noun in the last two sentences: whereas in example (33) the tonal pattern on the noun *ʔanna*$_k$ 'father' in the accusative has a low tone on the first syllable and a falling tone on the last

syllable, in example (34) the tonal pattern on the same word *ʔanna* as the PIV has a high tone on the first syllable and a falling tone on the last syllable. In the following example, the noun *ʔanna*$_k$ ‘father’, is analyzed in its citation form:

(35) ʔànn-â T-03.03-15:55

father-acc/CIT
‘a/the father’

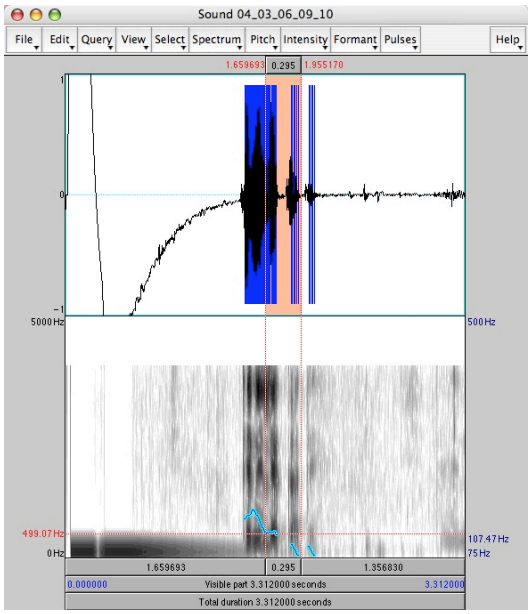
Spectrogram 35 T-03.03-15:55 (ʔanna)



The next examples describe the tonal pattern for a noun belonging to the t-class, *lekka*$_t$ ‘foot, feet’, as the PIV in example (36), and in the accusative in example (37):

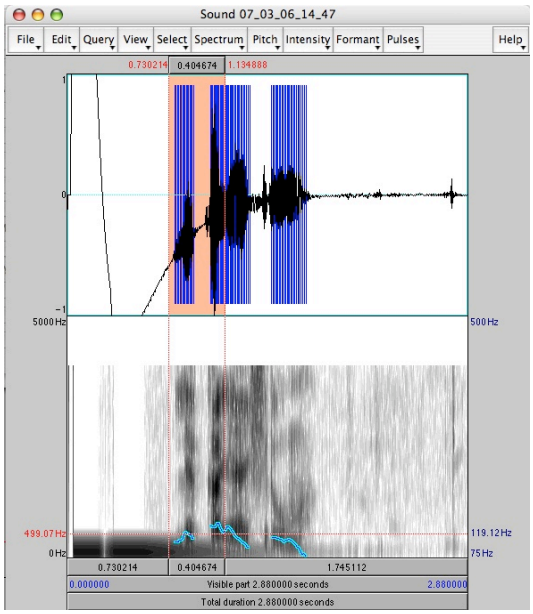
(36) tin-i lékk-â-te T-04.03-09:10
this.t-nom foot-acc-COP.t
‘this is a foot’

Spectrogram 36 T-04.03-09:10 (tini lekkate)



(37) lékk-â -ʔya haiʃʃ-iɗ-umma T-07.03-14:47
foot/feet-acc-my.poss wash-BEN- Pf1f
'I wash my foot/my feet'

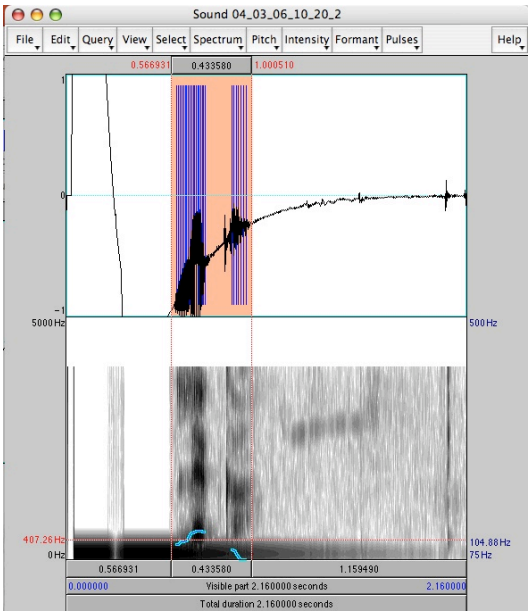
Spectrogram 37 T-07.03-14:47 (lekkaʔya haiʃʃiɗumma)



Example (38) shows the noun *lekka*$_t$ 'foot/feet' in the citation form:

(38) lékk-â T-04.03-10:20.2
foot-acc/CIT
'a/the foot'

Spectrogram 38 T-04.03-10:20.2 (lekka)



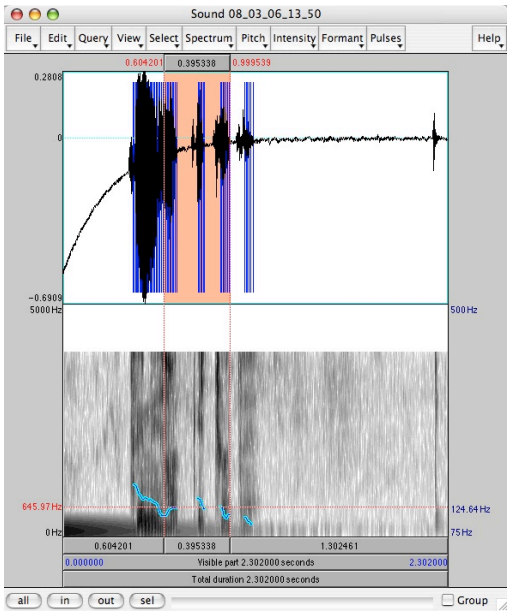
As we can see from examples (36), (37), and (38), the tonal pattern for the t-class noun *lekka*$_t$ 'foot/feet' is invariable in the three forms unmodified nominative, accusative and citation form: there is a high tone on the first syllable, and a falling tone on the last syllable.

5.3.2.2 Trisyllabic nouns

This section has the trisyllabic noun *hak'k'icco*$_t$ 'tree' as the topic of the analysis. This noun has already been analyzed in Section 5.3.1.2, and we will use again the findings from that section about the tonal pattern of the accusative in example (31) and about the tonal pattern of the citation form in example (32) again. Here we will only add a new example (39) of the noun as the PIV:

(39) tin-i hāk'k'-ícc-ô-te B-08.03-13:50
this.t-nom tree-SGT-acc/PIV-COP.t
'this is a/the tree'

Spectrogram 39 B-08.03-13:50 (tini hak'k'iccote)



5.3.2.3 *Conclusions from the comparison of clauses with a DO and clauses with a PIV*

There is a clear change in the tonal behaviour of disyllabic nouns belonging to the k-class when inflected in the accusative and when used as the PIV in a clause with the copula. In the accusative the first syllable has a low tone and the second syllable has a falling tone, whereas in the PIV the first syllable has a high tone and the last syllable has a falling tone, as the noun *ʔanna*$_k$ 'father' showed in examples (33) and (34) respectively. The citation form of the noun *ʔanna*$_k$ 'father' showed in example (35) confirms the tonal pattern already seen for the accusative in example (33).

A disyllabic noun belonging to the t-class, *lekka*$_t$ 'foot/feet', does not show any difference between the form used as the PIV in example (36), and in the accusative in example (37). In both cases, there is a high tone on the first syllable, and a falling tone on the last syllable. The same tonal pattern has the citation form in example (38).

A similar situation is attested for trisyllabic t-class nouns. In examples (31) we saw the noun *hak'k'icco*$_t$ 'tree' in the accusative; in example (32) the same noun is in its citation form, and in example (39) it is used as the PIV. In these three cases, the tonal

pattern of the noun remains the same: a mid tone on the first syllable, a high tone on the penultimate syllable and a falling tone on the last syllable. The finding of this section on PIV, accusative and citation form are summarized in Table 11:

Table 11 Comparison between accusative, predicative (PIV) and citation form (CIT)

Noun	Class	Inflected form	Case/grammatical function	Number of syllables	Examples
ʔanna	k	ʔànnă	acc	disyllabic	(33)
ʔanna	k	ʔánnâ	PIV	disyllabic	(34)
ʔanna	k	ʔànnâ	CIT	disyllabic	(35)
lekka	t	lékkâ	acc/PIV/CIT	disyllabic	(36), (37), (38)
hak'k'icco	t	hāk'k'íccô	acc/PIV/CIT	trisyllabic	(31), (32), (39)

6. Discussion and conclusions

In this chapter, I formulate those three hypotheses that were outlined in Section 1.2 and I discuss them on the basis of the current data. The discussion in the following has no aim of being exhaustive or definitive, because the research on the field is still on going, and, as we shall see in Section 6.4, several questions for further research can be formulate. In Section 6.1, the first hypothesis H_1 (unmodified forms of the nominative and the genitive are tonally different) is investigated. In Section 6.2 I express the second hypothesis (modified forms of the nominative and the genitive are tonally different) by means of two sub-hypothesis, H_2 and H_3. Section 6.3 deepens the third and last hypothesis H_4 (the accusative, the citation form and the predicative (PIV) are tonally alike).

6.1 Discussion of Hypothesis 1 (H_1): nom.U versus gen.U

The first hypothesis I am going to discuss focuses on the morphological marking of nom.U and of gen.U. I start the evaluation of H_1 with k-class nouns. When inflected in the unmodified nominative and in the unmodified genitive, the final vowel *-e(e)*, *-a(a)* or *-o(o)* of the stem in the unmarked case is changed into *-u* (i.e. Table 3). A working hypothesis (H_1) will therefore be that even though nominative and genitive in the k-class do not differ from one another from a segmental point of view, they show a suprasegmental difference in tone that allows speakers of Sidaamu Afo to recognize if the noun in question is inflected in the nominative or in the genitive, and subsequently if a particular argument in the clause has to be interpreted as the grammatical subject of the clause or as the possessor.

H_1 assumes that **nom.U and gen.U are suprasegmentally marked in different ways**, because there is a variation in the tonal pattern of nom.U and gen.U. From the comparison of the findings about the unmodified nominative of the k-class noun *mine$_k$* 'house' in Table 6 with the findings about the unmodified genitive of the same k-class noun *mine$_k$* 'house', and of another k-class noun *manna$_k$* 'people' cited in

Table 8, it can be affirmed that there is a tonal difference between the unmodified nominative and the unmodified genitive. While the tonal pattern on the first vowel is the same in both cases, the tonal pattern on the last syllable changes: we have a falling tone in the unmodified nominative and a high tone on the unmodified genitive. These findings strengthen H_1.

The comparison between unmodified and modified forms of a t-class noun is interesting even though the two forms are segmentally different. We saw in the paradigm described in Table 3, that the suffix *-te* is attached to the stem of the noun in gen.U. Comparing the noun *manco*$_t$ 'woman' in Table 6 and the nouns *lekka*$_t$ 'tree' and *ʔama*$_t$ 'mother' in Table 8 in their last vowel before the suffix *-te*, we notice a falling tone in the unmodified nominative and a high tone on the unmodified genitive: the same alternation on the last vowel above described. Also trisyllabic nouns show the same tonal variation on the last syllable, as we can see from the comparison of the noun *ʔuddano*$_t$ 'clothes' in the unmodified nominative in Table 6, and in the unmodified genitive in Table 8: we have again a falling tone in the unmodified nominative and a high tone on the unmodified genitive. The findings about the t-class nouns confirm H_1.

We can summarize the discussion about H_1 as following: **There is a tonal difference between nom.U and gen.U**. The difference rests on the last vowel of the stem of the noun, that means on the *-u* in the k-class, and on the vowel before the suffix *-te* in the t-class: **while the tone is falling in nom.U, it is high in gen.U**. H_1 is summarized in Table 12:

Table 12 Suprasegmental paradigm (nom.U and gen.U)

	nom.U	**gen.U**	
	final vowel	final vowel	suffix
K-class	-û	-ú	Ø
T-class	-ê/-â/-ô	-é/-á/-ó	-tê

6.2 Discussion of Hypotheses 2 and 3 (H_2 and H_3): nom.M versus gen.M

The modified form of the nominative and the genitive appear to be alike from a segmental point of view, in both the nominal classes. The question is if they differ in their suprasegmental qualities. In the segmental paradigm described in Table 3, we saw that k-class nouns, when inflected in the unmodified nominative and in the unmodified genitive, change the final vowel *-e(e)*, *-a(a)* or *-o(o)* of the stem in the unmarked case into *-i*, while t-class noun are invariable in these two cases.

It is tempting to hypothesize the same alternation that is attested for the unmodified nominative and genitive also for the modified form of the nominative and genitive. We can here assume the following: **H_2** posits a tonal alternation on the last vowel of the stem in the modified form of the nominative and the genitive: **there is a falling tone on the last syllable in nom.M and a high tone on the last syllable in gen.M.** If this is so, it is possible to make a generalization about the suprasegmental contrast between nominative and genitive, independently of the presence of an attribute.

The tonal variation on the last syllable of the disyllabic k-class noun *mine$_k$* 'house' in Table 7 and 9, does not support H_2: there is a high tone in the modified nominative and a low tone in the modified genitive. Still, we have an alternation, and it is

tempting to formulate a new hypothesis **H_3** that claims the following: **nom.M and gen.M are not suprasegmentally alike**. The findings about *mine$_k$* 'house' in Table 7 and 9 above discussed strengthen H_3. However, the findings about the trisyllabic t-class noun *ʔuddano$_t$* 'clothes' in the modified nominative in Table 7 and in the modified genitive in Table 9 do not support neither H_2 or H_3, because the tonal pattern is invariable in these two cases: we have a falling tone on the first syllable, and a low tone on the last two syllables, in both cases. In the evaluation of H_2 on the basis of the current data, it is unfortunately not possible to settle for a definitive interpretation of the tonal pattern for disyllabic t-class nouns (i.e. the discussion of the three hypotheses H_A, H_B, and H_C in section 5.1.2.1).

We can summarize the discussion about H_2 and H_3 as following: both hypotheses posit the idea that there is a suprasegmental difference between nouns in the modified forms of the nominative and the genitive. While H_2 gives a very specific expectation about which tone will be used in these cases, H_3 only predicts a tonal difference between these cases. The current data do not support either H_2 or H_3, but as already discussed in Section 5.1.2.1, it is possible to hypothesize different explanations that are unfortunately not testable on the basis of the data in the present corpus. This can be an interesting topic for further research.

6.3 Discussion of Hypothesis H_4: acc, CIT and PIV

It is interesting to compare the accusative of a noun with its citation form and the form used as PIV in sentences with a copula, because in the literature it is affirmed that they are the same. This is true from a segmental point of view, as we discussed in Section 4.4.1. The question is if they differ in the tonal pattern, and the answer can have some interesting theoretically implications. For example, if there is a tonal alternation in the accusative and the PIV, we could postulate a new case, namely a predicative case.

We can formulate the following hypothesis: **H_4** claims that the tonal pattern of a noun in its citation form is the same as the tonal pattern of the noun in the accusative, and further that the tonal pattern of a noun used as the PIV is the same as the tonal pattern of the noun in the accusative, thus the **three forms acc, CIT and PIV are alike both segmentally and suprasegmentally**.

As we can see from the comparison of t-class nouns in Table 10 and 11, H_4 is strengthened on the basis of the current data. The three forms accusative, citation form, and PIV are tonally alike both for disyllabic nouns (i.e. *minna$_t$* 'houses' in Table 10 and *lekka$_t$* 'foot/feet' in Table 11) and for trisyllabic nouns (i.e. *hakkicco$_t$* 'tree' in Table 10 and 11).

The matter is much more complex when it comes to k-class nouns: there is a variation of tonal patterns on the first syllable from a falling tone on *mânc-ô* (man-acc) in example (25), to a mid tone in *mānc-ô* (man.acc/CIT) in example (26), but also a variation on both syllables in *ʔànn-ă* (father-acc) in example (33) and in *ʔànn-ă* (father-acc/CIT) in example (35), compared to *ʔánn-â* in example (34). As we can see, no generalization may be obtained from the investigation of k-class nouns.

As I already argued in Section 5.1.2.3, it might be that in Sidaamu Afo there are several nominal subclasses, which may not differ on the segmental level but may diverge on the suprasegmental level.

6.4 Conclusion and Ideas for Further Research

This may be, as far as I know, the first attempt to describe such a complex matter as the understanding of the relationship between tone and the basic cases in Sidaamu Afo in a systematic way, and still there are several variables that need to be accounted for. Even though the evaluations of the hypotheses still need to be further examined, I found evidence for the use of tonal contrasts to mark the contrast between nom.U and gen.U case in Sidaamu Afo.

Some ideas for further research are here in place. The corpus should be extended to a broader range of words, including trisyllabic k-class nouns, so that it may be possible to trace several independent patterns that are not shown in my data. The findings in this thesis should be examined in different kinds of utterances: more complex statements, as well as questions and imperative clauses could be interesting fields of discussion about the relationship between tonal contrasts and intonational patterns. On the other hand it would be plausible to investigate the tonal variation by means of natural speech data.

An investigation of the basic case marking leads naturally to the question of a possible marking of case by means of tonal contrasts in the oblique cases, which are yet not completely described from a semantic point of view (i.e. the discussion in Yri, 2007:35). Hopefully this thesis will be a contribution toward understanding the relationship between tone and the three basic cases, nominative, genitive and accusative in Sidaamu Afo.

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